

APRIL

1918

# THE AGRICULTURAL GAZETTE OF CANADA

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SCHOOL PUPILS FOR FARM  
WORK

THE VARIATION IN ELEMEN-  
TARY COURSES IN AGRI-  
CULTURE

THE QUESTION OF A  
NATIONAL FLOWER

VACANT LOT AND BACK-  
YARD GARDENING



DEPARTMENT OF AGRICULTURE  
OTTAWA, CANADA.

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Vol. 5, No. 4



April, 1918

DOMINION OF CANADA  
DEPARTMENT OF AGRICULTURE

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# The Agricultural Gazette of Canada

EDITOR: J. B. SPENCER, B.S.A.

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Issued by direction of  
THE HON. THOS. ALEXANDER CRERAR  
Minister of Agriculture

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OTTAWA  
GOVERNMENT PRINTING BUREAU  
1918





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# The Agricultural Gazette

OF CANADA

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## VACANT-LOT AND BACK-YARD GARDENING

AFTER careful calculation it has been estimated that between \$20,000,000 and \$30,000,000 worth of food was raised on vacant lots and back-yard gardens in Canada last year. In the United States a more exhaustive calculation has been made. Mr. Charles Lathrop Pack, President of the National Emergency Food Garden Commission, estimates that 3,000,000 war gardeners in the Republic, last year on 1,150,000 acres of land, produced food crops valued at \$350,000,000, and that the women of the United States put up 500,000,000 quarts of fruit and vegetables. This year the indications are that in both countries the production in the aggregate will bulk a great deal larger. Not only do the reports published in Part IV in this number of THE GAZETTE warrant such an expectation in Canada, but the action of the Canada Food Board in taking energetic measures to further the movement cannot fail to prove a gratifying impetus. The Board proposes to elaborate the work where already established and to assist in organizing committees in new fields. The policy of the Board is to work in co-operation with provincial and local cultivation movements. It is using the press extensively and is helping with practical counsel and advice, and by making known the pressing needs of the situation.

Although the reports in THE GAZETTE are altogether from the cities of Canada, the work is not confined to those centres, for there are few towns which are not doing good work in this direction. There is, indeed, what may be termed a national uprising towards greater production. Practically every horticultural society, rotary club, board of trade, and innumerable other business and social organizations, as well as the municipal corporations, are interesting themselves, and the women are foremost in the movement.

Apart from the national service of thus liberating great quantities of food for overseas use, there are many benefits that must follow the actual taking up of vacant-lot and back-yard gardening. The blessing of intimate association with the soil in replenishing the larders that might otherwise be empty; the forming of a habit of thrift and independence, and the diversion, in many cases from idleness and unproductive effort, will all tend to unlift humanity as would no other enterprise.

# LIVE STOCK REGULATIONS IN STOCK YARDS

**H**IS Excellency the Governor General in Council, on the recommendation of the Minister of Agriculture, and pursuant to the advice of The Canada Food Board, has been pleased, under and by virtue of the powers conferred by the War Measures Act, 1914, or otherwise vested in the Governor in Council, to make the following Regulations under date of March 7th:—

## REGULATIONS

1. (a) The feeding in stock-yards of any kind of live stock within eight hours immediately preceding slaughter is prohibited.

(b) No wheat of any grade shall be used for feeding live stock in a stock-yard.

(c) No barley above grade No. 3, and no oats above grade extra No. 1 feed, shall be used for feeding live stock in a stock-yard.

(d) The waste in a stock-yard of any grain or any feed made in whole or in part from any grain product, due to carelessness of handling or feeding, or to over-feeding, is hereby prohibited.

(e) A copy of this regulation, and of regulation 4, shall be posted up in every stock-yard in each place, where feed is issued or sold.

2. No person shall sell or purchase any wheat fit for milling purposes for the feeding of poultry:

Provided, however, that where wheat has been grown together with other grain, and the wheat cannot be separated for milling purposes without undue cost, such mixture, provided it does not contain more than twenty-five per centum of wheat, may be sold or purchased for the feeding of poultry.

3. No person shall, without a written permit from the Canada Food Board, use any wheat, barley, oats, rye, Indian corn, buckwheat or peas for the purpose of feeding or decoying migratory wild fowl.

4. Any person violating any of the provisions of these regulations, or obstructing or impeding any officer or person enforcing or carrying out any of the provisions of these regulations, is guilty of an offence, and shall be liable on summary conviction before a Police Magistrate, or two Justices of the Peace, to a penalty not exceeding two hundred dollars, and not less than twenty-five dollars; or to imprisonment for a period not exceeding three months; or to both fine and imprisonment.

5. Where the proceedings in any case in which a fine is imposed under the authority of these regulations are instituted at the instance of any municipality, or by any officer of a municipality, the fine shall be paid to the treasurer of such municipality, to be disposed of as the municipality may from time to time direct. And where such proceedings are instituted at the instance of or by, any provincial officer, such fine shall be paid to the provincial treasurer, to be disposed of as such treasurer may from time to time direct.

## REGULATIONS REGARDING SEED CORN

**H**IS Excellency the Governor General in Council, on the recommendation of the Minister of Agriculture, and under the powers conferred by the provisions of the War Measures Act, 1914, was pleased on February 28, 1918, to make the following regulations:

1. (a) No person, firm or corporation shall until, on or after July 1st, 1918, remove or transport any Flint or Dent Corn capable of being used for seed purposes from within the district comprising the counties touching or bordering, on any of the waters of River St. Clair, Lake St. Clair, River Detroit, or Lake Erie, to any place outside of said district.

(b) No person, firm or corporation until, on or after July first, 1918, shall remove or

transport from the counties of Lambton, Essex, Kent and Elgin, any Flint or Dent Corn capable of being used for seed purposes, without first having obtained a written permit in duplicate from the District Representative of the Department of Agriculture for Ontario resident in the county, or resident in the county nearest to that in which such seed corn is held, one copy of which permit is to be attached to the package containing said seed corn and the other to be retained by the shipper thereof.

2. Seed merchants within the Provinces of Ontario and Quebec shall not sell, or contract for the sale of, or ship, or deliver, or consign, to any common carrier or any person or deliver or cause to be shipped, either directly or indirectly, until after the 15th day of April, 1918, any of the varieties of Flint Corn, or any of the



following varieties of Dent Corn, viz.:— Wisconsin No. 7, White Cap Yellow Dent, Bailey and Golden Glow, except for delivery in any of the counties of the Province of Ontario touching the waters of the River St. Clair, Lake St. Clair, River Detroit, or Lake Erie.

3. Any person violating the provisions of these regulations shall be guilty of an offence and shall be liable on summary conviction to a fine not exceeding fifty dollars, or to imprisonment for a term not exceeding one month, or to both fine and imprisonment.

## FEDERAL ASSISTANCE FOR GREATER PRODUCTION

AT a conference of the premiers of all the provinces held in Ottawa, 15 and 16 February, with members of the Canada Food Board, it was decided that the best policy to follow in order to secure better production of cereals and meats was to leave the matter as largely as possible to each of the different provinces. The Canada Food Board undertook to give the need for the greatest possible production all the publicity within its power. At the same time the Government, through the Honourable the Minister of Agriculture, promised to consider in what way assistance could best be rendered to each province. Ultimately, as announced by the Premier in the House of Commons on March 19, it was decided by Order in Council to make the following cash assistance to the different provinces: Ontario \$60,000; Quebec, \$60,000; Nova Scotia, \$30,000; New Brunswick, \$25,000; Prince Edward Island, \$5,000; British Columbia, \$15,000; Manitoba, \$25,000; Saskatchewan, \$35,000, and Alberta, \$25,000.

Dr. J. W. Robertson, Chairman of the land section of the Commission of Conservation, has been representing the Canada Food Board in consultation with the governments of the Maritime provinces and Ontario and Quebec, and the Honourable C. A. Dunning, Treasurer for Saskatchewan, the Food Board in the same manner with the Western provinces.

Outlining the policy of the provinces it can be stated that Ontario aims to secure organization down to

county and municipal committees, particularly to assist in labour supply and distribution, and to bring home directly to the individual farmer the need of the greatest possible effort; Quebec aims to supply similar organization and to produce enough wheat to feed herself and to greatly increase meat animals. Nova Scotia and New Brunswick have the same objective. Also in each of these provinces, the desire is to produce enough coarse grains to meet their own individual requirements for animal feed.

In Western Canada, Alberta has been divided into sixteen districts, each district under the supervision of a greater production agent. The agents so appointed will come under central supervision. The objects are to insure supplies of seed, to find out help that is necessary, to secure tenants for unoccupied land, and to arrange definitely with farmers for the breaking of new areas of their holdings for 1919 crops. Saskatchewan and Manitoba have similar aims, and, along with Alberta, are taking steps to secure all available labour from towns and cities that could be of use on the farms. A Provincial Labour Bureau has been established and public meetings are being held in each province.

As stated in THE AGRICULTURAL GAZETTE for March, the Dominion Government has further assisted in the work, through the Canada Food Board, by the purchase of one thousand Ford tractors, which will be distributed during April and May.

# PART I

## Dominion Department of Agriculture

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### THE DOMINION EXPERIMENTAL FARMS

#### AGRICULTURAL EXHIBITS AT FAIRS

**A**T the annual convention of the Ontario Fairs Association, two officials of the Dominion Experimental Farms made recommendations to fair boards with a view to increasing the educational value of the autumn fairs. The recommendations are equally applicable to corresponding fairs in other provinces.

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#### DISPLAY OF FARM PRODUCTS.

BY W. A. LANG, CHIEF OF THE DIVISION OF EXTENSION AND PUBLICITY

The agricultural fair is a great educator and has contributed much towards better cultural methods, better seed selection, and the improvement of stock. Every effort, therefore, should be put forth to improve such fairs, both from an educational and a commercial standpoint. There are exhibits for purely educational purposes, there are exhibits featuring natural products and resources for publicity purposes, there are exhibits for advertising purposes only, and there are exhibits for competition. Being usually the best of their kind, or class, the exhibits might all be said to be educational and, in a general sense, of interest and value to the visiting public. I place educational exhibits first, partly because it is the class of exhibits that appeals to me the most, and, partly, because they do not always receive that attention that they deserve.

#### ATTRACTIVENESS A NECESSITY

Just what will especially interest and satisfy the general public at agricultural fairs is quite a problem. The question is not only how much information the exhibits will convey, but also how much of it will find its way home. It must be remembered that fair day, or fair week, is holiday time for the farmer and his family, and that in a considerable number of cases it is their only holiday time of the year. It is, therefore, important that exhibits be made attractive as well as instructive. Consequently, too much care and thought can hardly be expended on their preparation. The lesson to be learned from an exhibit will not lose any of its force by being presented in such a way that the visitor does not recognize that he is being taught.

In planning an educational exhibit we should not forget or undervalue the display feature. A colour scheme

should be adopted and followed, it always being borne in mind that the average farmer visitor has little time to study printed information. Show him results, show him the profitable way, and his attention and interest will be secured.

Exhibits of natural resources and products, whether of a township, county, province, or nation, are usually put up for publicity purposes, with a view to invite settlement, to secure capital, or in the hopes of developing or extending markets. This class of exhibits is usually undertaken by a county or provincial organization strong enough financially to install it in such a manner as will be in keeping with the importance of the object sought. In exhibits of this nature, quality and excellence of arrangement must have first attention. It is an indisputable fact that an attractive, well-arranged display will appeal to a greater number of people, even if the materials featured are not quite up to standard, than a poorly arranged exhibit of higher quality articles.

#### EXHIBITS FOR ADVERTISING

Probably the most attractive displays at the average fair are those put up by manufacturing and mercantile firms for advertising purposes. The merchant of to-day realizes the value of the window dresser, and this class of exhibit can very well be left in the capable hands of those interested and responsible for them.

It is in the arrangement of exhibits of dairy products, fruits and vege-

tables, grain, domestic manufactures, and ladies' work, where much improvement can be made, because these classes are usually in charge of individual directors, who should not only be willing to devote some considerable time and thought to their arrangement, but should have sufficient appropriations placed at their disposal to enable them to furnish attractive and convenient accommodation for their display. In a wooded country like Ontario, where lumber is reasonably cheap and colouring plentiful, it seems too bad to see the splendid products of the farm, the orchard, and the garden laid out on rough, unpainted and uncovered boards. A little white enamel paint and white oilcloth will greatly add to the attractiveness of the display of dairy products, etc. Some green cloth for the tables and shelving for the fruit exhibits, with trays, plates or baskets of uniform size and colour, will prove pleasing to the eye. Uniform containers of wood or glass for the grain display are very much more interesting and attractive than the usual assortment of bags of all sizes, colours, and age. Vegetables should have the same consideration as fruit, and, if properly staged, would make as fine a display.

In the staging of all exhibits, one prime requisite should always be kept in mind, the provision of ample aisle space for the public. No passage should be less than 8 feet, while 10 feet is preferable. It is better to cramp an exhibit than make it impossible for the visitor to stop and examine it.

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## THE POULTRY EXHIBITS

BY F. C. ELFORD, DOMINION POULTRY HUSBANDMAN

The preparation that careful poultry exhibitors give to their birds is largely lost if suitable preparation is not made for the exhibits on the part of the fair board. In fact, the ar-

rangements made by the fair board have much more to do with the continued success of the exhibits than the preparations made even by the exhibitors themselves.



## ACCOMMODATION

No doubt the accommodation at the average fair is improving, but there is need for more advancement in this direction. Where the shady side of a fence or the back of the pavilion is the only accommodation provided, the poultry exhibits are not likely to be ever very large or attractive. A suitable building should be provided, and there should be above everything else plenty of light. There ought to be wire coops provided by the association, and the ideal method is to stage them in single tiers with good wide aisles between. The old system of using exhibitors' coops and placing them on tables or on top of each other beside the wall, is not satisfactory, nor does it do justice to the exhibit, the judge or the visitor.

## THE DIRECTOR

A good live director in charge of the poultry work will arrange for the receiving of all birds and the cooping of them according to varieties, and will know where they are cooped so that he can assist the judge in his work.

## PRIZE LISTS

If ever there was a time when the poultry prize lists needed revision, it is at present. As a rule, the majority of the prizes are awarded to classes that are called "fancy," that is they are not utility birds in any way. This is no time for any fair to countenance encouragement to any class of stock that will not produce, and no patriotic fair board can conscientiously continue to offer the bulk of the prizes for birds the chief production of which is feathers. More than ever the utility end of the show must be emphasized.

## UTILITY CLASSES

All birds belonging to what might be called the utility classes, that is birds that can be recommended to

the ordinary man as good producers in either eggs or flesh, should receive emphasis. Better prizes should be given to all such classes. Prizes for breeding pens ought to be increased, and a sales class introduced. In the sales class, birds that are for sale should be entered, and information on the coop as to the prize and facts in reference to the breeding be given. The sale of these birds should be made through the director in charge, or the secretary of the fair.

To encourage beginners, it might be well to have a beginners' class, where only those who have never exhibited before would be allowed to exhibit. In order to stimulate an interest and to substitute something for the fancy classes which might be eliminated, a laying contest should receive careful consideration. Laying contests have been carried on at two of our Canadian winter fairs, and have proven very attractive. They might be of practical benefit to some of our later fall fairs, though during the earlier fairs they are not so easy to conduct. Where it can be conducted, however, a laying contest will prove the main attraction in the poultry exhibit, as it is of such a utilitarian nature it should be tried out where possible.

## EDUCATIONAL FEATURES

More features of an educational nature should be introduced. Local poultry supply firms might be given more encouragement to demonstrate incubators and other poultry appliances designed for the saving of labour and increasing the egg yield. Government educational exhibits and demonstrations could in many cases be secured. Demonstrations as to how best to kill and pluck, select the layers, caponize, build poultry houses, etc., could be introduced with very little expense and would be much appreciated. In some cases even moving pictures might be considered, from which much instruction could be imparted.

The re-organization of poultry exhibits is not only advisable, but is essential if we are to respond to the appeal to produce, and again to pro-

duce, to eliminate waste of all kinds which includes the loafer in the poultry house.

## THE DIVISION OF BOTANY

### THE WHITE PINE BLISTER RUST SITUATION

BY W. A. MCCUBBIN, M.A., ST. CATHARINES, FIELD LABORATORY OF PLANT PATHOLOGY

**B**OTH Canada and the United States have made special efforts during the summer of 1917 to discover the exact spread of the Blister Rust on the continent, with a view to enabling a definite and permanent policy to be adopted towards this serious disease. From reports recently published from all the states and provinces involved it is found that the disease is very widely distributed in the eastern part of the continent. It has been found generally on currants from New York and Ontario eastward, and one or two infections occur in Wisconsin and Minnesota. West of the Mississippi no trace of the disease has yet been discovered.

In Ontario diseased pines have been found in but few places, but the currant stage is very widespread. From the results of scouting, and by securing information through the public schools, it has been found that the currant rust is present in 38 counties out of the 43 in the province, and that in these counties it occurs in 120 townships out of a total of 455. Roughly speaking, the greatest amount of the disease is present in a circle of about 60 miles radius with Toronto as its centre, with another generally infected area in the Ottawa-Montreal district. In

Quebec, out of the 30 counties examined 8 are known to be diseased, and it is probable that the rust is much more widely distributed than somewhat the limited survey has shown.

The general continental situation was thoroughly discussed at a conference in Pittsburg towards the end of 1917, and the consensus of opinion among the pathologists present was that, as far as the eastern section of the continent was concerned, the disease was here to stay. It is hoped that the slightly infested states in the Middle West can be cleaned up, and that the disease may be still prevented from passing into the Rocky Mountain region, where there are pine areas of considerable importance.

In the east our problem is now concerned with the question of whether we can grow pines even if the disease is present. There is considerable ground for hope that this can be done by keeping wild and cultivated currants and gooseberries cut down for some little distance around the pines. It is planned to conduct experimental work which will determine the feasibility and the cost of this method of dealing with the disease.

# THE DAIRY AND COLD STORAGE BRANCH

## A NEW PLAN FOR COW TESTING AND A RESUME OF PAST WORK

BY CHARLES F. WHITLEY, IN CHARGE OF DAIRY RECORDS

A change of plan for cow-testing work has been decided upon and will take effect on May 1st next. On that date the Dairy Record Centres will cease to exist, and the position of Dairy Recorder will be abolished. In place of such organization, the Dairy Branch of the Department of Agriculture will enlist the services of cheesemakers, buttermakers, and other persons possessing the necessary qualifications to test samples of milk, paying sufficient to make it worth the while of anyone to give some attention to the work. The average yield of milk per cow has increased fully 30 per cent in recent years, but it is felt that there is still plenty of room for improvement. By the new plan it is hoped to reach many milk producers who have not up to the present been keeping records. At the same time upwards of thirty men of practical experience and ability will be released for other tasks. In view of the adoption of this revised system it will be interesting to take a glance back and to note in some detail the progress that has been made in a work of supreme importance to the dairy industry.

### EARLY STAGES OF COW TESTING

In the year 1904, the Minister of Agriculture announced that the Dairy Division would undertake to test for one year the milk of individual cows belonging to farmers in the neighbourhood of Cowansville, Que., free of cost to the owners. The object of the work was to secure data for the farmers of Canada showing the difference in productiveness of the individual cows in herds under

the same management, with a view of indicating the possibilities of increasing the profits from milk production by paying more attention to the selection, care, and feeding of dairy cows.

Samples of milk from 66 farmers were received and tested. The highest number received in any one month was in July, the number of samples than received being 1120. Three farmers continued to weigh and sample for twelve months.

In the first herd of 25 cows, the average yield for the twelve months was 3,306 lb. milk, 131.9 lb. fat, the value, with fat at 18 cents per pound, being \$23.74; the cost of feed (calculated very closely) was \$25.48. The second herd of 14 cows had an average of 4,949 lb. milk, 189.9 lb. fat; value \$34.19; feed cost \$24.01; profit per cow \$10.18. The third herd, 19 cows, had an average of 5,994 lb. milk, 275.3 lb. fat; value at 18 cents, \$49.56; feed cost \$30.18; profit per cow, \$19.38.

In order to make the work more widely known the plan in 1905 was to carry on tests for thirty days in seven different localities. In 1906 eighteen cow-testing associations were organized, the first one in January at Cowansville, Que. During that year there were 266 members enrolled owning 3,005 cows, with a total of 17,125 separate records kept during the twelve months. The associations were all organized on the simple basis of the members providing their own equipment of scales and bottles, the Dairy Division doing the testing free of charge by paying makers at the local cheese factory and

creamery. Similar methods have been followed up to the present.

#### ESTABLISHMENT OF DAIRY RECORD CENTRES

A new feature was added in 1911, when six dairy record centres were established. Representatives of the Department, termed dairy recorders, were then appointed to stay on the ground continuously for the whole year and encourage the keeping of dairy records. Herd record books

were prepared and, in most cases, kept by the recorder for the dairy farmer; in them the yield of milk and fat of each cow, together with the cost of her feed, could be conveniently entered each month.

The recorders collected dairy statistics in their centres, some of which are tabulated below. By 1913 there were twenty-two dairy record centres, and from 1914 to 1917 inclusive, there were thirty-five. The following table shows their distribution by provinces:

TABLE NO. 1, SHOWING THE NUMBER OF DAIRY RECORD CENTRES IN OPERATION, AND THE TOTAL NUMBER OF MONTHLY RECORDS OF COWS RECEIVED EACH YEAR

PROVINCE	1911		1912		1913		1914		1915		1916		1917	
	Dairy Record Centres	Monthly Records	Dairy Record Centres	Monthly Records	Dairy Record Centres	Monthly Records	Dairy Record Centres	Monthly Records	Dairy Record Centres	Monthly Records	Dairy Record Centres	Monthly Records	Dairy Record Centres	Monthly Records
Ontario.....	3	11,881	9	32,494	11	39,548	15	51,552	15	75,444	15	95,134	15	80,832
Quebec.....	2	7,905	4	13,262	6	18,409	10	31,064	10	44,550	9	46,617	9	50,781
New Brunswick.....					2	2,722	5	10,106	5	17,701	6	21,521	6	11,258
Nova Scotia.....					2	6,659	2	7,209	2	13,733	2	12,999	2	24,077
P.E. Island.....	1	3,655	1	2,629	1	1,822	2	4,579	2	7,938	2	6,991	2	8,816
Saskatchewan.....							1	1,272	1	2,584	1	2,313	1	2,715
Total.....	6	23,441	14	48,385	22	69,160	35	105,782	35	161,950	35	185,575	35	178,479

#### MEMBERS, COWS, AND RECORDS

Table No. 2, showing the total number of members each year, with the total number of cows being test-

ed, and the total number of monthly records received during the year, including cow testing associations and dairy record centres:

YEAR	TABLE NO. 2	No. of Members	No. of Cows	Total Monthly Records
1906.....		266	3,005	17,125
1907.....		789	7,324	41,257
1908.....		751	7,243	43,518
1909.....		893	10,028	53,883
1910.....		1143	11,853	72,423
1911.....		1255	12,242	70,196
1912.....		1418	16,076	86,543
1913.....		1686	15,946	88,530
1914.....		2109	17,777	126,527
1915.....		2743	23,009	183,560
1916.....		3383	29,409	212,854
1917.....		3421	29,240	205,156



HERDS AND AVERAGE YIELDS  
Table No. 3, showing the number  
of herds and the number of cows

recorded for the full period of lac-  
tation in 1916, by provinces, with  
the average yield of milk and fat:

PROVINCE	TABLE NO. 3	No. of Herds	No. of Cows	Milk, Lb.	Average Yield Test Per Cent	Fat, Lb.
Ontario.....		838	8,677	6,061	3.50	212.3
Quebec.....		1,008	6,639	4,856	3.87	188.0
Maritime.....		1,040	3,672	4,926	4.01	197.7
Saskatchewan.....		52	208	4,718	3.73	176.2
Totals and averages.....		2,938	19,196	5,140	3.77	200.7

The average test of 3.77 per cent of fat is calculated on a total production of about one hundred and four million pounds of milk, the result of 212,854 individual Babcock tests.

The yields are typical of each year from 1908 to 1916. So many new men and so many new herds with

young cows have been added each year that the general tendency has been to keep the average yields about the same.

#### PERCENTAGE OF FAT PER MONTH

Table No. 4 gives the average percentage of fat by months and provinces:—

TABLE NO. 4, PER CENTAGE OF FAT PER MONTH

MONTHS, 1914	ONT.		QUE.		N.B.		N.S.		P.E.I.		SASK.		Total Cows	Average Fat
	No. of Cows	Per Cent Fat	No. of Cows	Per Cent Fat	No. of Cows	Per Cent Fat	No. of Cows	Per Cent Fat	No. of Cows	Per Cent Fat	No. of Cows	Per Cent Fat		
January.....	1,110	3.6	481	4.2	326	4.4	326	4.4	88	3.8	.....	.....	2,331	4.0
February.....	1,021	3.6	473	3.7	302	4.2	329	4.3	88	3.8	.....	.....	2,213	3.8
March.....	1,609	3.4	616	3.8	340	4.1	344	4.2	114	3.7	52	3.5	3,075	3.7
April.....	3,555	3.4	1,615	3.6	396	3.9	640	4.1	134	3.6	72	3.6	6,412	3.5
May.....	6,150	3.3	2,601	3.6	936	3.8	926	3.9	255	3.6	129	3.6	11,997	3.4
June.....	7,452	3.3	3,670	3.7	1,355	3.9	1,389	4.0	507	3.5	175	3.7	15,948	3.5
July.....	7,522	3.3	5,896	3.7	1,465	3.9	1,618	4.0	666	3.7	175	3.7	17,342	3.6
August.....	7,408	3.4	5,555	3.9	1,536	4.0	1,469	4.0	801	3.6	169	3.9	16,938	3.7
September.....	7,012	3.6	5,351	4.1	1,349	4.2	1,243	4.2	768	3.5	178	4.1	15,901	3.8
October.....	6,417	3.8	4,535	4.3	1,051	4.3	930	4.2	688	3.9	140	4.1	13,761	4.0
November.....	4,948	3.9	3,337	4.5	730	4.5	766	4.4	568	4.1	125	4.1	10,474	4.1
December.....	3,035	3.9	2,039	4.6	493	4.3	655	4.3	396	4.1	124	4.1	6,742	4.2

#### CONTRASTS IN TYPICAL HERDS

Table No. 5, showing contrasts in production in six typical herds.

TABLE NO. 5	YIELD OF THE BEST COW IN EACH HERD				YIELD OF THE POOREST COW IN EACH HERD			
	Herd No.	Age	Milk, Lb.	Test, Per Cent	Fat Lb.	Age	Milk, Lb.	Test, Per Cent
1.....	8	4220	3.7	156	12	2945	3.6	106
2.....	8	3690	3.9	145	4	2540	4.2	106
3.....	12	5105	3.6	184	10	3005	4.5	137
4.....	9	5065	3.7	186	5	3820	3.8	146
5.....	8	4570	4.3	197	5	3165	4.2	134
6.....	6	6015	3.5	210	7	4796	3.5	167

The average yield of all the cows in these six herds was 4,024 lb. milk, 3.8 test, 154.5 lb. fat. The difference in yield between the poorest and best cows as shown above runs as high as 2,100 lb. milk and 63 lb. fat.

## VALUE OF PURE-BRED SIRES

Table No. 6 shows the value of a pure-bred dairy sire. Contrast made at Farmer's Union, Ont., dairy record centre:—

TABLE NO. 6	No. of Herds	No. of Cows	Total Lb. Milk	Average Lb. Milk Per Cow
Group 1, pure-bred sire.....	7	83	655,801	7,901
Group 2, grade sire.....	7	84	395,873	4,712
Difference in favour of pure-bred sire..	.....	.....	259,928	3,189

This table indicates:—

1 Even with one cow less, the first group of 83 cows, where the herds were headed by a pure-bred sire, gave 259,928 pounds of milk more than the second group.

2. The difference in production per cow was 3,189 pounds of milk, which, if divided, amongst the seven owners meant a total of \$2,646.87 or \$378.12 additional money for each man.

## INCREASES IN YIELDS AND HERD IMPROVEMENT

The tables presented herewith help, in a measure, to duplicate the trend of increased production. In several districts where cow testing has been practiced for two or three years, names could be given of twenty-five or thirty dairymen who have made considerable increases in the yield; some of them of over two thousand pounds of milk per cow.

Dairymen have received new ideas; many are now aiming, for instance, at nine or ten thousand pounds of milk per cow. A large number of farmers are keeping private records on forms supplied by the Dairy Branch, copies of which are not returned to the Department. Hence it is believed that the cow-

testing movement has had a much greater influence on milk production than can be tabulated in figures at the present moment. It is probably a conservative estimate that the average yield per cow for Canada is now thirty per cent greater than when cow-testing work was originated. But that is by no means the whole of the story: better cows have taught dairymen that better conditions pay. Accordingly, numerous cow stables have been renovated, improved methods of cultivation and feeding have been instituted, more pure-bred stock introduced; so that wherever cow testing has been in practice intelligently, many farms have been vastly improved. Such values cannot adequately be shown by cold figures.

As a time has arrived when the supply of feeding cattle at Winnipeg is barely sufficient to meet local demands, the Live Stock Branch of the Department of Agriculture announces the suspension until further notice of the Special Stocker and Feeder policy, adopted in the fall of 1917, under which a fifty percent freight rebate was allowed on carlot shipments of cattle purchased at the Winnipeg Stock Yards and shipped from there to country points in Eastern Canada for feeding purposes.

# THE ENTOMOLOGICAL BRANCH

## SOME LADYBIRD BEETLES DESTRUCTIVE TO PLANT LICE

BY WILLIAM A. ROSS, DOMINION ENTOMOLOGICAL LABORATORY VINELAND STATION, ONTARIO

THE study of the life-histories and habits of aphids has brought to light many intensely interesting natural phenomena such as polymorphism, the alternation of sexual and parthenogenetic generations (heterogeny) and the habit of alternating food plants. But possibly the greatest marvel it has revealed to us is the astounding fecundity of these small, fragile insects. Buckton, in commenting on this, states that, if all the progeny of a single rose aphid were to live,

Fortunately for us, Nature does not permit these great powers of multiplication to have full play. From early spring to the close of the season aphids are beset and held in check by hosts of enemies, amongst which are numbered ladybird beetles and their larvæ, syrphid larvæ, hymenopterous parasites, aphid lions, *Aphidoletes* larvæ, *Leucopis* maggots, predacious capsids and tree crickets.

In this paper, we shall confine our attention to one group of aphid-eating or aphidivorous insects, namely, the ladybird beetles.



FIG. 1.—LARVA OF LADYBIRD BEETLE,  
ENLARGED ABOUT THREE TIMES  
(Original)

they would at the end of 300 days be equal in weight to the population of China sevenfold. Gillette estimates that the descendants of one plant louse passing through ten generations of fifty each, would be, if all survived, approximately two quadrillions. "If they were all martialled 150,000 abreast, in close enough order so that each could place its antennæ upon the louse in front, they would make a procession long enough to reach round the world."

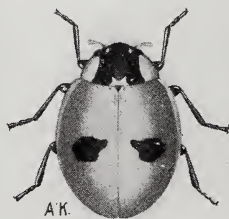


FIG. 2.—LADY BIRD BEETLE, *ADALIA BIPUNCTATA*, ENLARGED ABOUT FIVE TIMES  
(Original)

### THE LADYBIRD BEETLES

The ladybird beetles, or "ladybugs," are easily recognized by their oval, hemispherical shape, their three-jointed tarsi and their conspicuous colouring. Most of them are red or



yellow with black markings or black with red markings. Their eggs, oval in shape and yellow in colour, are laid in clusters on foliage and bark. Their larvæ are the voracious, alligator-like grubs commonly found on plants infested with aphids.

During the past four years we have collected over twenty-five species of ladybird beetles in the Niagara district. Out of that number, eight species, viz.: *Adalia bipunctata*, *Coccinella 9-notata*, *C. 5-notata*, *C. trifasciata*, *Hippodamia 13-punctata*, *H. convergens*, *Megilla maculata* and *Anatis 15-punctata*, are of great importance in the control of plant lice.

#### THE TWO-SPOTTED LADYBIRD (*Adalia bipunctata*)

Broadly oval. Head black, with two yellow spots between eyes. Thorax black, with yellow lateral margins. Wing-covers red, with a black spot near the centre of each. Under surface of body black. Length  $1/8$  in. to  $1/5$  in.

This species is apparently the most common ladybird beetle in the Niagara district. According to our observations, it is the most important insect enemy of the apple aphids, *A. malifoliae*, *A. pomi* and *A. avenae*, and of the cherry aphid, *Myzus cerasi*. It attacks a host of other aphids, amongst which the following might be mentioned: corn aphid, pea aphid, bean aphid, plum aphid, birch aphid, privet louse, viburnum aphid (*Aphis viburnicola*), rose aphid, and oak aphid.

This ladybird beetle occurs so commonly on aphid-infested plants that the damage wrought by the aphids is frequently credited to it. Some people even go so far as to accuse the innocent ladybird of giving birth to the plant lice. Others—careful housewives—finding it hibernating within their houses, mistake it for the notorious “buffalo moth,” and treat it accordingly.

*Breeding experiments.*—In experi-

ments with eight over-wintering couples, Mr. W. P. Shorey, my assistant, obtained the following data:—

The egg-laying capacity per female ranged from 13 eggs to 468 eggs, with an average of 149 eggs. The period of incubation varied according to the temperature from 4 to 13 days, the average being about 7.5 days. The average length of larval life was 22 days, the maximum and minimum being respectively 31 and 18 days. The average duration of the pupal stage was 6.8 days, the maximum 12 days and the minimum 5 days.

*Feeding experiments.*—In the insectary experiments with this species, adult beetles devoured from 70 to 100 aphids daily.\* During a period of eight days, two individuals consumed no less than 1434 plant lice.

#### THE FIVE-SPOTTED LADYBIRD (*Coccinella 5-notata*)

Hemispherical. Head black, with two yellow spots between the eyes. Thorax black, with front half of lateral margins yellow. Wing-covers red, with a black basal cross band and two black dashes on each elytron. Legs and undersurface black. Length  $1/4$  in. to  $3/8$  in.

This species is common in the Niagara district. We have recorded it as being of importance in the control of the green apple aphid, rosy aphid, oat aphid, bean aphid, corn aphid, cherry aphid, melon aphid, viburnum aphid, pea aphid, and the privet louse.

*Breeding experiments.*—The average egg production of ten individuals in confinement was 147 eggs, the maximum being 254 eggs. The period of incubation ranged from 3 to 19 days, with an average of 7.9 days. The average length of larval life was 27.3 days, the maximum 29 days, the minimum 24 days. The duration of the pupal stage varied

\* All the plant lice used in the feeding tests were immature.

from 2 to 5 days, with an average of 4.1 days.

*Feeding experiments*—Adult beetles destroyed from 137 to 165 aphids daily. During a period of 4 days, two individuals devoured 1180 plant lice.

THE NINE-SPOTTED LADYBIRD  
(*Coccinella 9-notata*)

Hemispherical. Head black, with a broad yellow band between the eyes. Thorax black, with front margin and half of the lateral margins yellow. Wing-covers red or yellow, with four black spots on each wing-cover, and a common one on the inner margin near the base. Legs and under surface black. Length  $\frac{1}{4}$  in. to  $\frac{3}{8}$  in.

This is another very common species. In 1916, it was the most prevalent ladybird in apple orchards infested with aphids. We have recorded it as feeding on the following: apple aphids, cherry aph's, pea aphids, melon aphids, bean aphids, spiræa aphids, corn aphids, rose aphids, evening primrose aphids.

*Breeding experiments*.—Four females in confinement produced an average of 123 eggs per individual. The period of incubation was from 4 to 11 days, the average being 8.4 days. The length of larval life was about 24 days. In the case of the only individual which reached the adult stage, the duration of pupal life was 4 days.

*Feeding experiments*.—In 6 days' time two adult beetles consumed 1429 aphids, or in other words, from 94 to 146 aphids per day per adult.

THE THREE-BANDED LADYBIRD  
(*Coccinella trifasciata*)

Broadly oval. Head black, with two yellow spots between the eyes. Thorax black, with front margins and anterior half of lateral margins yellowish. Wing-covers red or yellow, with three black transverse bands, the median and posterior bands interrupted in the middle.

Legs and under surface black. Length  $\frac{3}{16}$  in. to  $\frac{1}{4}$  in.

While sweeping grass and clover during June and July, we have taken large numbers of this species. In abundance, it probably ranks with or next to *Adalia bipunctata*. We have found it feeding on the following economic species: apple aphids, cherry aphids, privet louse, corn aphids, bean aphids, melon aphids, viburnum aphids, spiræa aphids, cabbage aphids, and pea aphids.

*Breeding experiments*.—In our experiments with this species, very few eggs were laid by confined adults. The maximum egg production noted by us was 92 eggs per female. The period of incubation varied from 3 to 12 days, with an average of 8.1 days. The average length of larval life was 23 days, the maximum 28 days, the minimum 17 days. The average duration of pupal life was 6 days, the maximum 8 days, the minimum 4 days.

THE THIRTEEN-SPOTTED LADYBIRD  
(*Hippodamia 13-punctata*)

Oblong, oval. Head black, with yellow mouth parts. Thorax black, with anterior and lateral margins yellow and with a black dot within each lateral margin. Wing-covers red or yellow, each with six black spots and one common spot at the base. Length  $\frac{3}{16}$  in. to  $\frac{1}{4}$  in.

This species has been observed attacking the cabbage aphids, bean aphids, corn aphids, melon aphids, cherry aphids, and the apple aphids. It is, of more importance in the control of vegetable plant lice than of tree-infesting species.

*Feeding experiments*.—One adult devoured from 64 to 108 aphids daily for a period of 3 days.

THE CONVERGENT LADYBIRD  
(*Hippodamia convergens*)

Oblong, oval. Head black, with yellow between the eyes. Thorax black, with anterior and lateral

margins yellow and two oblique yellow bars. Wing-covers red, each with 6 black dots. Length  $\frac{1}{4}$  in. to  $\frac{1}{3}$  in.

This species is apparently very subject to fluctuations in the province of Ontario. Some years it is rare, e.g., 1914, 1915, and 1917, and other seasons it is very abundant,

e.g., 1916. It is very voracious and energetic in habits. Our food records for this species are apple aphids, corn aphid, cabbage aphid, pea aphid, and birch aphid.

*Feeding experiments.*—The feeding records for this species are given herewith in tabular form:—

APHID	Sex of Beetle	Feeding Period	Total No. Aphids Eaten	No. Min.	Devoured Max.	Daily Average
<i>A. maidis</i> .....	Female	6 days	553	88	110	92.2
<i>A. maidis</i> .....	Male	6 "	551	82	98	92
<i>A. pomi</i> .....	Female	8 "	775	73	146	97
<i>A. pomi</i> .....	Male	8 "	711	56	144	89
<i>A. brassicae</i> .....	Female	7 "	495	59	93	71
<i>A. brassicae</i> .....	Male	7 "	464	53	89	66.3

#### THE SPOTTED LADYBIRD

(*Megilla maculata*)

Head black, with a red median stripe. Thorax red, with two large black spots. Wing-covers red, each with four black spots and two common ones on the inner margins. Legs and under surface black. Length about  $\frac{1}{4}$  in.

This species is very commonly found on grasses and herbaceous plants, but is seldom taken on trees. This past season Mr. Shorey observed thousands of adults, pupæ, and larvæ amongst some hay which was being carted into a local farm barn. The adult beetle is apparently very fond of the pollen of dandelions.

Our food records for *Megilla maculata* are: cabbage aphid, melon aphid, pea aphid, corn aphid, spiræa aphid, birch aphid, cherry aphid, and apple plant lice.

*Feeding experiments.*—During a period of 5 days, two beetles destroyed

463 aphids, or in other words, from 21 to 73 aphids per day per adult.

#### THE FIFTEEN SPOTTED LADYBIRD

(*Anatis 15-punctata*)

Very broadly oval. Head black, with two yellow spots between the eyes. Thorax black, with anterior margin, broad lateral margins, and two spots on the posterior margin yellow and with a black spot on each lateral margin. Wing-covers vary from yellowish to dark brown, with eight spots on each. In dark specimens, the spots are almost invisible. Under surface black, with yellowish or reddish brown margins. Legs, femora black; tibiae and tarsi, yellowish brown. Length  $\frac{3}{8}$  in.

This, our largest ladybird beetle, is not at all common in the Niagara district. We have taken it most frequently on trees infested with black cherry aphid. At various times we have found it attacking apple aphids (particularly *A. malifoliae*) and birch aphids.



## THE HOUSE SPARROW AND THE BROWN RAT IN THE PRAIRIE PROVINCES OF CANADA

BY NORMAN CRIDDLE, DOMINION ENTOMOLOGICAL LABORATORY, TREESBANK, MAN.

THE House Sparrow (*Passer domesticus*) and the Brown Rat (*Epimys norvegicus*), like the obnoxious house fly, are both largely dependent upon mankind for their spread and perpetuation in North America. The house sparrow was purposely introduced with the idea, it is said, of destroying the Spanworm (*Ennomos subsignarius*) which it apparently succeeded in doing, at, however, great cost in other directions. In Canada, it was introduced on sentimental grounds by people who had no idea of the consequences.

The brown rat, like the house mouse, was introduced into America accidentally. It is a common inhabitant of ships and, therefore, its appearance on this continent, in any case, was only a matter of time.

From the original places of introduction on the eastern side of the country these animals have since made their way over most of the continent. The house sparrow being a strong, vigorous flier followed the settler very closely, and is now met with in almost every settled district. So closely in fact do these birds follow human settlers that, according to Mr. J. B. Wallis, of Winnipeg, they were actually present at latitude 56.23 with the construction gangs who were building the Hudson Bay Railway in 1917.

The brown rat, owing to its mode of travel, has been somewhat slower in making its way northward, but it is now found over a wide range of territory and in Manitoba has probably invaded the whole area south of the Canadian Pacific Railway main line, besides having crossed it in various places. There is no doubt whatever that these rodents make regular migratory movements over the country and that during these periods rivers are no serious obstacles to their travels. The writer has personally

followed their tracks on one occasion, for a distance of three miles, made in a single night, and there is little doubt that they travel far greater distances during the hours of darkness.

As was mentioned above, both the house sparrow and the brown rat are dependent upon mankind for their spread and perpetuation. This is true apart from their actual introduction into the country and becomes more so as we pass to colder latitudes such as is met with in the prairie provinces.

It is well known that the house sparrow is closely associated with the haunts of man. They are essentially birds of barns and out-buildings, preferring to nest within such structures and only when this is not convenient do they resort to the trees close at hand. In winter time they are still more dependent upon buildings and when these do not afford additional warmth such as is supplied by the presence of live stock, the birds are obliged to seek winter quarters elsewhere. Thus we have regular, periodic migrations towards the cities and villages in autumn and back to the farms again in spring time. There appears to be also a well-marked movement southward in autumn and northward in spring. These movements are primarily due to the necessity of securing shelter and warmth in winter time especially during the colder periods, when the birds are not able to survive outside. Food is also an important consideration as it cannot be procured in sufficient quantities under normal conditions outside. With reference to cold, observation shows that a temperature of 25 degrees F. below zero causes sluggishness and consequently inactivity. This results in a loss of food which very soon produces death. Without the

warmth supplied by animals or by some artificial means the birds perish very quickly at a temperature of 35 degrees F. below zero, and in Manitoba a single night at a temperature of 40 degrees below zero has been known to destroy an entire flock which was deprived of the warmth supplied by two pigs. All who have observed house sparrows must be able to bring to mind similar occurrences, and the writer has noted dead sparrows in the streets of Ottawa which had evidently succumbed to the low temperature occurring at that time. Thus we see that some form of heat, other than that supplied by mere shelter is necessary to enable house sparrows to survive our cold winter nights and that they are, therefore, dependent upon our assistance, however unwilling it is supplied, to enable them to perpetuate their kind.

Brown rats are also closely associated with mankind. Like the house sparrow they wander far afield in summer time and are found among stooks or stacks of grain, straw piles, as well as in burrows in potato patches, etc. As winter approaches, however, they leave the more exposed places to gather around the farm buildings, and later, as the weather becomes more severe, all outbuildings and those without animals, or artificial heat, are abandoned. Doubtless many of these animals die of exposure while attempting to locate warmer quarters as their numbers have decreased considerably by spring time. As rats, however, have only invaded Manitoba very recently, more evidence is necessary before definite information is available.

The enormous toll taken from the community by rats, and to a lesser extent by house sparrows, makes it desirable that every possible means of destroying them should be utilized. Poisoned baits, traps, guns, and, to a far lesser extent, cats are all useful for this purpose. The first two if used with ordinary precautions and skill will do much to keep these pests within reasonable bounds. Weasels, are, also, of much value as destroyers of both rats and mice, and, being able to follow along their runways, soon drive them away or exterminate them. Such facts are well known to all who have made a study of the question and it is not my purpose to enlarge upon them here.

From the evidence presented above it will be seen that another method, especially effective in the case of sparrows, is available. This is nothing more than to entice or drive these birds out of their shelters in the day time during a cold spell and block up the entrance by which they can make their way back. Or if convenient the live stock can be withdrawn from a sparrow-inhabiting building and the doors left open for a night or two. Both methods should prove effective in ridding a farm of the house sparrow pest.

With reference to rats the problem is more difficult but the fact that these rodents congregate in the warmer buildings during winter will enable us to concentrate our attention to those places until such time as concrete foundations can be substituted for those so commonly in use at present.

#### IMPORTATION OF PINE-APPLES AND BANANAS FROM THE HAWAIIAN ISLANDS

**B**Y an Order in Council passed on February 11, 1918, subsection (b) of section 7, which reads as follows:—

The importation into Canada of the following is prohibited:

(b) All non-canned fruits, plants or portions of plants or vegetable matter from the Hawaiian Islands.

has been amended to read:—

(b) All non-canned fruits, plants or portions of plants or vegetable matter from the Hawaiian Islands, except pineapples (*Ananassa sativa*) and bananas (*Misa spp.*), which may be imported provided they have been inspected by the United States Department of Agriculture, certified free from infestation by the Mediterranean fruit fly, and that the boxes, crates, bales or other containers shall be marked with the name and address of the consignor and the name and address of the

consignee and shall bear the original or a duplicate copy of the certificate of inspection.

Importers are advised by the Dominion Entomologist to instruct their shippers fully with regard to the requirements governing the importation of pineapples and bananas from the Hawaiian Islands. The importation of all other fresh fruits, plants, etc., is prohibited.

## THE HEALTH OF ANIMALS BRANCH

### SWINE FEEDING REGULATIONS

IN view of the interest being generally manifested in the cities and towns of Canada in hog-raising, as recommended by the Food Controller, it would appear appropriate at this time to direct attention in THE AGRICULTURAL GAZETTE to the regulations of the Department with respect to the feeding of garbage. In Section 88¾ of the Contagious Diseases Act this provision is made:

The feeding of swine upon garbage or swill, either raw or cooked, obtained elsewhere than on the premises where fed, is prohibited, unless special permission in writing is first obtained from the Veterinary Director General.

Raw garbage sometimes contains fragments of uncooked pork which may readily carry the infection of hog cholera to hogs which eat it. Licenses to feed garbage are issued

free of charge to parties who apply to the Veterinary Director General, and who provide the necessary appliances for cooking garbage, and will undertake to do so.

For violation of the regulation as here set forth, three men were prosecuted at Edmonton, Alta., during the month of February, that is for feeding garbage to hogs without the necessary license being obtained from the Veterinary Director General. Previous to prosecution these people had been duly warned on more than one occasion by officers of the Health of Animals Branch, but they persisted in their action. Their course was so clearly an infraction of Section 88¾ of the Animal Contagious Diseases Act that proceedings were taken and the men, being found guilty, two of them were each fined \$30 and costs and the third \$20 and costs.

### VIOLATIONS OF THE MEAT AND CANNED FOODS ACT

ON March 11th, the Health of Animals Branch instituted prosecutions in Montreal for violations of the Meat and Canned Foods Act. In one case a merchant was fined \$100 and costs for offering for export meats that had not been inspected according to the provisions of the Act, and, in another case, a company was fined \$25 and costs for putting to illegal use the inspection legend. In the latter instance,

Government labels were used a second time contrary to the law, which especially provides for the destruction of the label containing the legend after it has once been used. Section 3 of the Meat and Canned Foods Act requires every animal slaughtered and all carcasses, portions, or products thereof, intended for food purposes shall be inspected and dealt with according to the regulations.



# THE SEED BRANCH

## SEED CORN FOR CANADIAN GROWERS

BY GEORGE H. CLARK, B.S.A., SEED COMMISSIONER

IN the March number of THE AGRICULTURAL GAZETTE there was shown the action that was being taken by the Dominion and Provincial Governments to insure to the farmers of Canada an adequate supply of seed of the cereal grains and vegetable seeds for this year, and of the latter for the year following. It can now be stated that an ample supply of seed corn may be expected from the United States to Canada for planting for fodder purposes. A committee of the Canadian wholesale seed trade has assumed full war-time responsibility for the importation of seed corn suitable for ensilage in quantity to meet requirements.

The season in the United States, as in Canada last year, was unfavourable to the ripening of corn, with the result that there is a grave deficiency in the supplies of seed corn of the earlier maturing sorts, such as are usually grown in the central and northern states and Canada. Indeed it is realized that not more than seventy-two per cent of the normal acreage of corn lands in the states north of Kansas, Missouri, Tennessee, and Virginia can be planted with the sorts usually grown in those areas.

A survey of the seed corn situation by the United States authorities has brought out the fact that the supply of seed of the late southern varieties is not plentiful, considering the demand for ensilage corn throughout the northern areas of the United States, and also of Canada. In this matter, as in all others concerning the food situation, the United States authorities desire that the needs of Canada should receive the same

consideration as those of the people of the republic. The Seed Stock Committee at Washington have, therefore, arranged with the United States War Trade board so that the supply of seed corn available in the United States will be placed at the disposal of Canadian ensilage growers. They have, therefore, agreed to release, under license, an amount up to five hundred thousand bushels, on condition that all of the orders from Canada would issue from one central governmental organization. Arrangements have, therefore, been made under authority from the Minister of Agriculture with the War Trade board of the United States, whereby all Canadian orders for seed corn will be confirmed by the Canadian Government Seed Purchasing commission.

In conference with representative wholesale seedsmen in Toronto, February 22nd, it was arranged that a committee of the wholesale seed trade will co-operate with the Seed Purchasing commission. This committee undertakes to provide that there will be no shortage of ensilage seed corn for Canada. The committee consists of: A. C. Hogg, of Hogg & Lytle, Limited, Toronto, Convenor; E. F. Crossland of Steele Briggs Seed Company, Toronto; John Rennie of Wm. Rennie Co., Ltd., Toronto; Walter Bruce of J. A. Bruce & Co., of Hamilton; W. McWilliams of Wm. Ewing Co., Limited, Montreal; J. O. Duke, Ruthven, Ont.

It was agreed by the seedsmen that the net profits on seed corn imported under the order of the Seed Purchasing commission, shall not exceed 5 per cent on carload lots and 7½



per cent on less than carload lots in wholesale quantities. The price of the corn is not fixed, and will depend upon the condition of the market when orders are placed.

An order for 100,000 bushels has already been placed by the Seed Purchasing commission with a St. Louis firm. Seed corn ordered from this company by Canadian dealers will come forward under the commission's order, but Canadian seedsmen will have to accept corn grown within the prescribed area. Orders placed with other firms who can

deliver corn from this area, may be filled if they are confirmed by the Seed Purchasing commission. Orders for seed corn of varieties not grown in or south of Kansas, Missouri, Tennessee, and Virginia, or from dealers who cannot deliver from this area, will not be filled. For convenience in operating with the Seed Trade committee the work of the Seed Purchasing commission in connection with the seed corn will be handled through the Toronto offices of this Branch, Mr. W. J. Lennox 28 Front St. East.

### SEED TESTED IN FEBRUARY

BY E. D. EDDY, B.S.A., CHIEF SEED INSPECTOR

**D**URING February 2,307 samples were received for test at the Ottawa Seed Laboratory, an increase of 258 over the number received in February, 1917. The number of samples received for germination test in February, 1918, was 1,267 compared

with 426 in the same month last year. This increase is largely made up by samples of wheat, oats, barley, corn, peas, beans and field root seeds. The following table indicates the germination test results with some of the principal kinds of seeds reported during February.

	Wheat	Oats	Barley	Corn	Peas	Beans	Mangels and Beets
Number of samples reported.....	88	325	79	436	40	31	36
Average per cent germination.....	94	81	93	40	86	70	68
Number germinating up to standard for good seed.....	59	128	49	95	25	9	4
Number germinating below two-thirds of standard for good seed.....	1	36	1	293	4	8	14

From the above it will be noted that the average germination of corn samples was very low. Many of the samples received were practically dead. There is also need for precaution in using western grown oats for seed. Quite a large proportion of the bean samples were weak in vitality.

The number of samples received for purity test in February, 1918, was 1,196, about 500 less than a year ago. On account of the light crop and general scarcity of clover seed, fewer samples have been submitted for test. The following indicates

the grading of the clover and timothy samples during February: Timothy: total, 361; No. 1, 45; No. 2, 126; No. 3, 91; rejected, 99. Red Clover: total, 405; No. 1, 101; No. 2, 127; No. 3, 119; rejected, 58. Alsike: total, 170; No. 1, 36; No. 2, 54; No. 3, 38; rejected, 41. Alfalfa: total, 25; No. 1, 10; No. 2, 11; No. 3, 4. Mixtures: total, 54; No. 1, 1; No. 2, 21; No. 3, 15; rejected, 17.

At the Calgary Seed Laboratory 7,145 samples were received for test from September 1st to February 28th. Of these 2,951 were received in February and 2,503 in January.

# PART II

## Provincial Departments of Agriculture

### RECENT AGRICULTURAL LEGISLATION

#### QUEBEC

AT the recent session of the Quebec provincial legislature the following amendments to existing legislation affecting agriculture were passed:—

1. Under Bill No 19, the European Rust of currants and the White Pine Blister Rust were added to the list of injurious pests, enumerated in Article 2041-1 R. S. Q., and authority was given to the Lieutenant-Governor in Council to extend the application of the section to other destructive insects and plant diseases.

2. (a) Under Bill No. 48, agricultural associations are authorized to make the members' fee \$2.00, instead of \$1.00, as heretofore, by resolution passed at any general, annual, or special meeting.

(b) The object of the second amendment to the law of agricultural associations is to enable 25 members to apply to the Minister relative to the decision of the County Council as to matters affecting exhibitions when they are not satisfied with such decision.

(c) The third amendment refers to the payment of services rendered.

(d) The fourth amendment changes the date of the annual meeting from the second Monday of January to the third Wednesday.

(e) Under the fifth amendment, local municipalities not including

more than five practising farmers, are not allowed to appoint a member to the board of directors of the association. The object of this amendment is to prevent small towns from obtaining control of agricultural associations.

3. Bill No. 49, concerning agricultural clubs, changes the date of the annual meetings to the second Tuesday in January instead of the second Wednesday.

4. Bill No. 50 amends the law of agricultural co-operative associations and:

(a) Provides that all shares, while remaining at \$10.00 as in the past, shall be payable in five annual instalments of \$2.00, instead of ten instalments of \$1.00, and authorizes the association to decide by regulation that the shares shall be payable in less than five instalments, and to fix the amount of each.

(b) Another amendment to the law of co-operative associations embodied in article 6 authorizes co-operative associations to pay a maximum dividend of 8 per cent instead of 6 per cent.

#### APPROPRIATIONS FOR AGRICULTURE

The appropriations for the fiscal years of 1917-1918 and 1918-1919, ending June 30th, are as follows:—

	1917-18	1918-19
Civil Government.....	46,500.00	50,850.00
Agricultural Societies.....	100,000.00	120,000.00
Farmers' Clubs, encouragement of agriculture in general, including subsidy to the South Shore Railway Co., land clearing competitions, lectures on agriculture, etc.....	100,000.00	255,000.00
Agricultural and Horticultural Society of Montreal.....	500.00	500.00
Pomological and Fruit Growing Society.....	500.00	500.00
Horticultural Society, Quebec.....	500.00	.....
Council of Agriculture.....	3,000.00	3,000.00
Agricultural Schools.....	30,000.00	40,000.00
Veterinary Instruction.....	5,500.00	6,000.00
Housekeeping Schools (Ecoles ménagères).....	10,000.00	21,000.00
Dairy Association of the Province.....	2,000.00	2,000.00
Dairy School of St. Hyacinthe and making of the farm.....	10,000.00	15,000.00
Dairy industry and inspection of factories.....	87,000.00	127,000.00
Horticulture.....	5,000.00	6,000.00
Official Laboratory of the Province.....	2,000.00	4,000.00
Lectures on Agriculture.....	9,000.00	.....
Journal of Agriculture.....	27,000.00	27,000.00
Aviculture.....	3,000.00	6,000.00
Provincial Agricultural Merit.....	3,500.00	6,000.00
Arbor Day.....	100.00	.....
Exhibitions.....	30,000.00	34,000.00
Totals.....	\$475,100.00	\$723,850.00

## SASKATCHEWAN

A NUMBER of Acts were passed at the recent session of the Provincial Legislature referring to agricultural matters. These were, however, mainly measures amending Acts previously in force. The Municipalities Seed Grain Act revises and consolidates the old Act, one of the new provisions being that in case the sum required for seed grain does not exceed \$2,000.00, the money can be raised under the authority of resolution of the council, instead of being referred to the rate-payers. The latter course is necessary when it is desired to exceed that amount. It is especially pointed out that councils should only make use of the Act after every effort has been exhausted by the farmers to secure the necessary grain in the seeding seasons.

### STALLION ENROLMENT

The Horse Breeders' Act has been changed so that every stallion in the province must be enrolled, and so that no stallion over thirty months

old taken into Saskatchewan can be offered for sale without enrolment. Every stallion must also undergo examination. Until this is done, no certificate will be issued for service. The certificate will be issued by the stallion board on recommendation of the examiners. For pure-breds, there will be three classes of certificates—the first for horses true to type, of good conformation, and thoroughly sound; the second for horses up to standard in every other way, but inferior in conformation, and the third for horses having some unsoundness not of a hereditary nature, but due to accident. All grade horses must be sound and of good conformation. Provision is made for the issue of the certificates to all horses which have previously been examined, and permits are to be issued to others until such time as the examination can be made. Municipalities retain the right to state whether they will allow grade stallions to travel within their boundaries, and if it is considered that there is a sufficient number of pure-bred stal-

lions in the municipality, upon petition to the Minister of Agriculture, a municipality may be incorporated as an "approved stallion district" in which no grade horses will be permitted to render service. There is no positive provision preventing the keeping of an unenrolled stallion, but, in such a case, there must be no route bill or breeding cards printed or posted, no advertisement issued, or any charge made for service. The schedule of fees is as follows: For a certificate of enrolment, \$5; for duplicate, \$1; for transfer of certificate, \$1; for annual renewal of certificate, \$1; for examination, \$5. The Act came into force on the first day of February this year.

#### LIVE STOCK PURCHASE AND SALE

The Live Stock Purchase and Sale Act has been amended by striking out the section which made it necessary for a purchaser under the Act to be either a patron of one of the co-operative creameries operated by the Department of Agriculture, or to be a member of one of the societies or associations organized for the purposes of this Act or for live stock improvement.

The Act incorporating the Saskatchewan Co-operative Creameries, Limited, is amended by prohibiting any incorporated company hereafter organized with similar objects, from using the word "Saskatchewan" as any part of its name. The schedule to the Act is amended by increasing the sixteen companies originally constituting the amalgamation to nineteen.

#### AGRICULTURAL SOCIETIES

The Agricultural Societies Act is amended by making provision for the formation under the Act of boys and girls' clubs and farmers' clubs that may encourage manual and domestic training among the young and promote the formation of school gardens, gopher, and weed clubs. The age of persons entitled to sign an

application for the organization of an agricultural society is changed from eighteen years to twelve years. Persons may become life members of agricultural societies on a payment of \$15 to the funds, and if fifty or more such life members are secured, a Government grant will be made equal to one-half the amount collected for life membership. Several changes have been made in regard to the grants. The membership grant is fixed at 25c per member for societies having a membership of one hundred to one hundred and fifty, and 50c per member for societies numbering from one hundred and fifty to two hundred members. To earn this grant, a society must be represented at the annual agricultural societies' convention. A grant will be paid of half the cash prizes paid in connection with exhibits, competitions, any kind of agricultural shows, seed fairs, etc. If a society chartered prior to November 1, 1917, has been in existence less than five years, a grant will be made on the basis of two-thirds of the prizes paid in connection with the exhibitions and competitions until the end of five years from the date of its organization. A grant up to one-half the disbursements incurred in providing speakers, not exceeding \$25, will be paid to societies holding at least five meetings for the dissemination of agricultural knowledge. The total amount of the grants, exclusive of the life membership grant, must not under the Act in any year exceed \$750, except in cities and towns with three thousand population, when the grants may amount to, but must not exceed, \$2,000.

#### FARM LOANS

The Saskatchewan Farm Loans Act has been amended by the addition of a clause providing that the Provincial Treasurer can raise by way of loan the sum of ten million dollars instead of five million, as before, for the purposes of the Act. This last amendment makes it possi-



ble for the Provincial Treasurer to advance a sum up to the total amount of the mortgage before the mortgage is deposited with him. It will now be feasible to seize any favourable opportunity to sell enough securities so that there may always be sufficient money on hand to meet required advances.

#### WILD LANDS TAX ACT

The Wild Lands Tax Act is largely new in its provisions. It provides for taxation at one per cent of the assessed value on the wild lands in each municipality. The lands to be subject to the tax are described as:—

All the land of an owner in the municipality when it does not exceed 320 acres in extent and when less than one-quarter of its area is under cultivation upon the first day of August of the year in which the assessment is made, unless the owner actually resides on the land, or resides on a farm of at least eighty acres in area situate within a distance of nine miles therefrom in a direct line; or resides upon a farm of that area and so situate, owned solely and occupied by his or her father, mother, son, daughter, brother, sister, husband, or wife; provided that if the individual owner is absent on active service in the wars of the Empire, he shall for the purpose of this section be deemed to be in actual residence. All the land of the owner in the municipality when it exceeds 320 acres, but does not exceed 640 acres in extent, and when less than one quarter of its area is under cultivation upon the first day of August of the year in which the assessment is made. All the land of an owner in the municipality when it exceeds 640 acres in extent and when less than one-half of its area is

under cultivation upon the first day of August of the year in which the assessment is made.

“Cultivated,” or “under cultivation,” means improved for any agricultural purpose, such as cropped, ploughed, summerfallowed, or used as garden land; and cultivated land includes hay lands from which the hay is cut annually and lands actually used for pasture and surrounded by a fence consisting of not less than two strands of barbed wire attached to substantial posts not more than twenty feet apart.

Under the previous law secretary-treasurers of municipalities were allowed to charge a small commission for collecting the tax. Under the new Act, the municipality is to receive five per cent of the tax collected, but this goes to the municipality instead of to the secretary.

All crown land and land held by, or in trust, for the use of a tribe of Indians, and land held for the public use of a municipality, and the land of any person not more than forty acres in extent, are exempt from taxation. Wild land valued at \$20 an acre has to pay an annual tax of \$32 per quarter section, in addition to municipal taxes, the supplementary revenue tax, and patriotic tax.

#### APPROPRIATIONS FOR AGRICULTURE

Following are the appropriations for the years ending April 30th, 1918 and 1919:—

	1917-18	1918-19
Civil Government.....	\$ 35,830.00	\$ 35,130.00
Assistance to General Agricultural Interests.....	67,600.00	63,000.00
Assistance to Live Stock Industry.....	50 200.00	50,000.00
Assistance to Dairy and Poultry Industry.....	18,100.45	15 200.00
Publicity and Statistical Work.....	23,600.00	18,000.00
Weed Control, Seed Inspection, and Exhibitions.....	10,900.00	11,300.00
Bureau of Labour.....	11,100.00	11,700.00
Game Protection and Museum.....	14 700.00	14 160.00
Miscellaneous Services.....	2,100.00	500.00
Totals.....	\$234,130.45	\$218,990.00

# SHORT COURSES IN AGRICULTURE

## QUEBEC

### MACDONALD COLLEGE

A SERIES of short courses was held at Macdonald College in the months of January and February. These were devoted to the subjects of household science, horticulture, animal and cereal husbandry, poultry, and suburban gardening. With the exception of the suburban gardening course, which was held at McGill University, Montreal, the courses were held at Macdonald College. The instructors mainly consisted of the members of Macdonald College, but federal officers, including Messrs. H. S. Arkell, Live Stock Commissioner; F. C. Elford, Dominion Poultry Husbandman; and W. A. Brown, Chief of the Poultry Division of the Live Stock Branch, also afforded assistance, as well as Mr. P. E. Aird, president of the Montreal Poultry Association. The household science course, which extended from January 22nd to 26th,

included cookery, dressmaking, and nutrition. Forty-four pupils attended. The horticultural course, which was held from February 5th to 8th, included studies and demonstrations in vegetables and fruit growing. The class consisted of fifty-five students. The animal husbandry and cereal husbandry courses ran concurrently from February 12th to 15th. Seventy-six students attended this course. The poultry course began on February 19th and ended on the 22nd. It embraced incubation breeding, rearing, and marketing, and one lecture on fruit culture. Fifty-six students were in attendance.

The suburban gardening course, held at McGill University, was designed to assist beginners who had access to pieces of land to produce the utmost of food crops upon it. The attendance was 240.

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## ONTARIO

### ON FARM POWER

A short course on farm power was held at the Ontario Agricultural College during the last two weeks of January. One hundred and fifty students took the course. Eleven makes of farm tractors were used to demonstrate tractor operation. The forenoons were

given principally to lectures from charts, and the afternoons to studies of the machines, these including taking down, assembling, and running. The course included the study not only of tractors, but other of farm machines operated by gasoline, by kerosene, and by electricity.

## MANITOBA

BY W. R. ROBERTS, B.S.A., DISTRICT REPRESENTATIVE, BINSKARTH

THE popularity of gas engines was enhanced materially in the district of Russell when the short course fortnight came to the town.

One farmer, a successful old timer, expressed his appreciation, when he said, that "it was the very best thing that could come to the district." His reasons were based on the practicability of such a course for farmers.

The instruction in live stock was very ably given by J. R. Bell, B.S.A., District Representative, Portage la Prairie. Lecture periods were given in the mornings and practical periods in live stock judging in the afternoon.

The farmer students, though of long experience with stock, found it rather embarrassing to give reasons for their placings, without knowing a systematic outline to follow in doing so. Much progress was made before the end of the course. Horse judging created an interest that will stay. The desire is for more of this class of education. This branch of the school alone was worth while.

In gas engineering, lectures were given in the mornings and shop practice in the afternoons, by Messrs. Smythe and Allin.

The normal farm boy loves an engine. The popularity of gas en-

gine work was much in evidence in the shop, where several stationary engines and tractors were used.

The weather was very cold to work the tractors, but, nothing daunted, these interested students were anxious to know all that could be learned during the limited time at their disposal.

Scarcity of labour makes it imperative to know how to operate labour-saving machinery efficiently. The patriotism of the farmer will not languish, if devices will help to keep up production.

Interesting work was also done with grain and poultry under the direction of H. E. Walker, B.S.A., and J. E. Bergey, B.S.A., respectively.

This short course is one of the nineteen held throughout the province during the winter months.

The Department of Agriculture through these courses comes in direct contact with the people it represents.

The contact is a happy one, in that it establishes confidence in the service which the Department seeks to give.

The promotion of agriculture depends largely upon the development of uniform and economical methods of farming, which these courses uphold.



# WAR-TIME POULTRY RATIONS

## SASKATCHEWAN

BY R. K. BAKER, B.A., PROFESSOR OF POULTRY HUSBANDRY, UNIVERSITY OF SASKATCHEWAN

**O**WING to the difficulties of obtaining corn or Government standard screenings, which our poultrymen would like to use as substitutes for wheat, we have suggested to them modifications of some of the standard rations. The following is a fair example:—

*Scratch Feed:*—Shrunken wheat, 30 lb., barley, 30 lb.

*Dry Mash:*—Bran, 8 lb.; shorts, 10 lb.; crushed oats, 16 lb.; meat scrap, 6 to 8 lb.

This is supposed to be fed in the proportion of six pounds scratch feed to four pounds dry mash. Where sour milk or butter milk are available these may take the place of meat scrap. In addition to the above the poultry would require vegetable feeds as well as grit and oyster shells and granulated bone.

## ALBERTA

BY A. W. FOLEY, POULTRY SUPERINTENDENT

**A**T the provincial poultry plant the rations used correspond fairly closely with those recommended by the Eastern States agricultural colleges. Modifications have been made on account of difficulty in securing some of the grains. I have never been able to secure a substitute for wheat that proved entirely satisfactory. This is also the experience of leading members of the poultry associations in this province. Elevator screenings are not available, and if they were our poultry men do not care much for them. In our egg-laying competition we used the following rations:

### DRY MASH

	Lb.
Bran.....	25
Shorts.....	25
Oat Chop.....	25
Alfalfa Meal.....	12½
Bone.....	5
Charcoal.....	1
Barley Chop.....	12½

This mixture is constantly before the birds in self-feeding hoppers.

Beef scrap, oyster shell and grit are also kept before the birds in hoppers.

### WET MASH

A wet mash consisting of the dry mash ration to which boiling water and 15 lb. of beef scrap is added and shorts to partially dry the mash is fed three times a week in the evening.

### GRAIN RATIONS

A light feed of whole oats is given each morning in the litter. During the winter a light feed of wheat, oats, or barley and, occasionally, a little corn is given at noon to insure exercise. Whole wheat is fed in the evening, when no mash is given.

### GREEN FOOD

Throughout the winter months alfalfa and sprouted oats are given as green feed. During the summer months sufficient green feed is produced in the runs.

# NOVA SCOTIA

## AGRICULTURAL INSTRUCTION ACTIVITIES

BY J. S. ARCHIBALD, B.S.A., DEPARTMENT OF CHEMISTRY, AGRICULTURAL COLLEGE

### EXTENSION WORK IN GUYSBORO COUNTY

IN past years Guysboro has been looked upon more as a fishing and lumbering county than as an agricultural one. Now, however, a change is in evidence and it is steadily rising to a position of importance in the farming industry. In May of 1916, Mr. A. B. MacDonald, a graduate of the Nova Scotia Agricultural College, was appointed Agricultural Representative for the county, and it is gratifying to know that he reports improvement in all lines of farming. At the time of his appointment pioneer work had to be done in getting the farmers to realize the value of improved seed grain, increased cultivation, better breeding and such like. To-day there are many calls from the county for high-priced bulls, registered seed, improved farm machinery and other requisites of improved agriculture.

Under Mr. MacDonald's direction the county held its first short course in January of this year. The course continued for three days and judging from the average attendance, which was over 100, it would seem that the farmers are interested in better farming and are anxious to do more than in the past. Five members of the staff of the Agricultural College at Truro were present and conducted the classes in seed judging; judging of horse, dairy and beef cattle; soil cultivation; potato spraying, and the use of fertilizers.

Ever since starting work in the county, Mr. MacDonald has devoted considerable attention to getting the school children interested in work on

the farm. School gardens were worked in many places last year, lectures in the school room have been given, and as Mr. MacDonald puts it himself, "I never lose an opportunity of calling at the country schools, even if I have only time to explain to the children one single idea of farming."

One good result of the work he has done among the school children has been the organization of the boys of Guysboro town into a poultry club known as the Chedabucto poultry club. On the last two days of the short course the club held a poultry show. Being the first one held in the county it proved more successful than was anticipated. Over two hundred exhibits were brought in, and the quality was by no means poor. This club is making arrangements to get the rural school children interested in the keeping of pure-bred poultry and in housing and caring for them in a better manner.

### HANDLING BARN-YARD MANURE

Prof. J. M. Trueman, of the Animal Husbandry department at the College of Agriculture, has carried on during the past year some experiments on different methods of handling barn-yard manure. The results are rather interesting, and, while Prof. Trueman does not consider them as at all final, they are given for what they are worth. His report is as follows:

In order to gain some little data as to whether or not it is wise to spread manure on frozen ground covered with snow, an acre of the cornfield was divided into halves, and one half covered while in the above condition in February, and the other half left until spring. In order to give each piece the same amount and kind of manure, one load was spread on the piece selected to

be covered in the winter, and the next load was placed in a pile on the other half acre. This was continued until ten loads had been spread and ten loads put in the pile. After the pile of manure had thawed out in May and the ground had also thawed the manure in the pile was spread.

The corn when cut showed rather the heaviest yield from the half acre on which the manure was spread in the winter. This was fairly level land with no chance for any great amount of washing to take place. The yield obtained was as follows:

Golden Glow corn cut green for silage—

Manure spread in winter . . .	13,492 lb.
Manure spread in spring . . .	11,603 "

Gain from winter spreading.	1,889 "
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It would appear that there was considerable gain from winter spreading in this case. At any rate it is safe to say that spreading on the frozen ground did not cause any loss in the fertility contained in the manure. The soil on the two halves was of equal fertility as far as could be determined, and they had both received the same treatment for the past five years at least.

## QUEBEC

### HOMEMAKERS' CLUBS' CAMPAIGN

BY FREDERICA MACFARLANE, HOMEMAKERS' CLUBS DEMONSTRATOR

THE Quebec Homemakers' clubs, true to their motto "For Home and Country," are planning to do their part in the production and conserving of food. By reason of the fact that these clubs are organized in country towns and rural districts, and also on account of the nature of their studies and the instruction given them by their demonstrators during the past three years, they are well qualified to help in this most necessary and urgent duty.

The success of the plan will depend largely upon the organizing ability of the Homemakers and the patriotism of the vicinities in which they work.

The plan is as follows:—

1. That each club immediately organize, under the leadership of one or more members, all the girls in that community.

2. That a canvass be made of every woman in that community to join with the club in this new movement.

The girls' organizations in conjunction with the clubs hope to help in some of the following ways:

1. By growing more vegetables, especially potatoes, beans, peas, etc., and by canning all the perishable vegetables not needed at once for food, while they are yet fresh and tender. The necessary equipment and supervision for this work to be arranged by each club to suit the needs of its community.

2. By raising those seeds for their own use of which there may be a shortage next year.

3. By picking and canning all fruit both wild and cultivated which might otherwise go to waste.

4. By raising more chickens to take the place of beef, and canning the surplus product.

5. By each housekeeper producing and preserving at least her own supply of eggs for the year.

6. By getting out the sap buckets and increasing the supply of maple sugar, and urging the use of substitutes for cane and beet sugar in candy making.

7. By making the soap for laundry purposes out of bones and the fats not used for food.

8. By doing all in their power to encourage any movement along the line of production and conservation; such as School Fair projects, "Keep a pig" and "Grow more wheat."

# ONTARIO

## SHEEP AND CATTLE RANCHING IN ONTARIO

BY C. F. BAILEY, B.S.A., ASSISTANT DEPUTY MINISTER OF AGRICULTURE

**D**URING the past summer the Ontario Government had a survey made of the waste lands of Ontario with a view to getting some idea of their value for sheep and cattle ranching. From the report received we find that there are millions of acres of this land, a large part of which would seem to be suitable for ranching purposes. At the present time there are upwards of 40 ranches varying in acreage from 600 to 85,000 acres. The majority of them, however, are not carrying very much stock and are somewhat handicapped for the lack of capital. There are, however, a number being conducted on a fairly large scale and with apparent success.

Before any great amount of capital is likely to become interested in the ranching business more definite information as to the cost of operating, building equipment, methods and

costs of land clearing, methods of feeding and caring for stock, marketing problems, etc., will have to be solved. With this in mind plans are under way to establish a combination cattle and sheep ranch. Ten thousand acres of land, where average conditions exist, will be selected for this purpose. This ranch will be run on practical lines and accurate accounts will be kept of all the operations, so that facts and figures will be made available to anyone who may be interested in ranching.

Close observation will also be made of the ranches that already exist, so that we may learn at first hand of the conditions, and assist ranch owners in solving their problems. It is hoped through this plan to do much to foster the ranching industry in Ontario, and to put ranching on a more permanent and profitable basis.

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## VINELAND EXPERIMENT STATION

**A** valuable part of the work of the Horticultural Station at Vineland is to test out various new varieties put on the market by nursery men and others, and to secure for testing promising seedlings or bud sports, which quite often occur throughout fruit growing districts. The station has prepared lists of new, or noteworthy,

varieties not at present grown in the test block, and invites fruit growers and nursery men anywhere in the province to send names of fruits which, in their opinion, should be tested. Correspondents are asked to supply also information concerning such seedlings and such new varieties as they possess.

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## JUNIOR FARMERS' IMPROVEMENT ASSOCIATIONS

BY R. S. DUNCAN, B.S.A., DISTRICT REPRESENTATIVE SUPERVISOR

**D**URING the past few years the District Representatives of the Ontario Department of Agriculture have been conducting a 4 to 6 weeks' course in agriculture

in their respective counties for farmers' sons ranging in age from 16 to 30 years. The attendance ranged from 15 to 70 with an average of 25 to 35. It was felt that there should be some



organization by which these young farmers, who were the rising hope of the agricultural community, might be held together in order that the new ideas which they received, the new methods learned, and the inspiration and enthusiasm which had been created would not fall on barren ground and remain dormant.

In 1914 the first Junior Farmers' Improvement Association was organized at the close of the special courses in agriculture. At the beginning of 1918 there were 82 such organizations with a total membership of 1,521.

#### THE OBJECT

Briefly stated, the object of the association is to create a deeper, more permanent and more intelligent interest in all that pertains to agriculture in its broadest sense. The movement is progressing very rapidly, and I am firmly convinced is now one of the most important features of District Representative work.



Membership Button

The advantages of organizing the boys in the agricultural classes are obvious. Much more effective work can be undertaken and the active organization has proven to be the means of keeping the young men interested in better agriculture.

The organization is usually called by the name of the place where the class is held. The boys are encouraged to hold regular meetings, which, however, are usually dispensed with during the summer months.

The Junior Farmers' Improvement Association has a four-fold object in view—educational, social, research and investigational, and financial. The meetings during the winter months partake of the nature of addresses, debates, mock parliaments, literature and music. During the summer, the Junior Farmer's Improvement Association in the district usually hold a picnic and conduct an automobile tour through certain districts.

#### TO CONDUCT COMPETITIONS

In addition to the educational meetings the Junior Farmer's Improvement Association members take part in conducting the various competitions, such as acre profit, feeding hogs for profit, baby beef, and dairy profit, which are carried on through the District Representatives.

In several instances some of the members have been loaned a set of milk scales for a year on condition that they will keep accurate records of milk produced and feed consumed in connection with their dairy cows. At the conclusion of the test the young man gives the results of his experience to the other members of the association at one of the regular meetings. Invariably this young man purchases a set of milk scales and continues recording weights to weed out the unprofitable cows.

Another feature worthy of mention is the conducting of live stock judging competitions at fall fairs for junior farmers. In addition to this we have the inter-county live stock judging competitions conducted at the Guelph and Ottawa winter fairs, which create a great deal of rivalry amongst the boys, to say nothing of their educational value.

#### THE OFFICERS

At the time of the Canadian National Exhibition held in Toronto last September, steps were taken to organize a Provincial Junior Farmers' Improvement Association. Unfortunately the meeting was not well advertised, and, as a consequence, only a few were in attendance. The officers elected at that meeting were as follows:—

President, R. H. Crosby, Markham, York County; vice-president, Cuthbert Howell, Brant county; sec.-treasurer, J. A. Snider, Downsview, York county; executive, W. W. Lord, Campbellcroft, Durham county, Wm. Peart, Haldimand county.

## THE CONSTITUTION

A constitution has been drafted, which will be submitted to the local branches and to another meeting, when it is hoped there will be more Junior Farmers' Improvement Associations represented.

Very effective work can be accomplished through the Junior Farmers' Improvement Association, and the movement should be fostered and receive every encouragement.

The following is the constitution:

## CONSTITUTION OF THE.....JUNIOR FARMERS' IMPROVEMENT ASSOCIATION

1. This association shall be known as the Junior Farmers' Improvement Association.
2. The object of the association shall be to create a deeper and more permanent interest in the agricultural life of the district;
  - (a) By the dissemination of agricultural learning among its members leading to improved farm methods;
  - (b) By conducting competitions, such as the acre profit competition, in the production of field crops;
  - (c) By conducting competitions, such as the feeding of hogs for profit, dairy profit and baby beef competitions, in the production of live stock;
  - (d) By arranging for live stock judging

competitions at the local fall fairs;

(e) By conducting simple experiments on the farm in cow testing, commercial fertilizers, spraying, pruning and thinning, underdrainage, apiculture, poultry, etc.

(f) By the introduction of better varieties of farm crops.

3. The officers of the association shall consist of a president, vice-president, secretary-treasurer, a committee of management and two auditors.

4. The association year shall commence the first day of March of each year.

5. The association shall hold at least two meetings each year, and, if possible, monthly meetings. The meetings shall be held at or near the place where the course in agriculture was conducted.

6. The membership of the association shall be limited to those who attended the course in agriculture arranged by the local Department of Agriculture.

7. Any *bona fide* farmer under 30 years of age may become an associate member of the association.

8. Each member shall be notified in writing of all meetings of the association at least five days previous.

9. Ten members of the association shall constitute a quorum for the transaction of business.

10. An annual membership fee of twenty-five cents shall be levied.

11. The constitution of the association may be amended by a majority vote at any regular meetings.

## THE CHAMPION JUNIOR JUDGING TEAM

THE championship judging teams of four Junior Farmers at the Ontario Winter Fair, held at Guelph in December and at the Eastern Ontario competition held at Kemptville Agricultural School toward the end of January, met at the Toronto Stockyards on February 14th and 15th to decide which team was the better judge of beef cattle, dairy cattle, horses, sheep, and swine.

The Western Ontario team, trained by J. C. Steckley, B.S.A., District Representative in York county, won over the Gengarry team trained by D. E. MacRae, B.S.A., District Representative, by one hundred and eighty-nine points. Messrs. W. J. Bell, B.S.A., Kemptville Agricultural School, and J. P. Sackville, B.S.A., Ontario Agricultural College, were the judges.

## THE MOTION PICTURE IN AGRICULTURE

BY S. C. JOHNSTON, B.S.A., DIRECTOR, MOTION PICTURE BUREAU

**R**EALIZING the possibility of the motion picture in the realm of education, the Ontario Government in 1917 organized a Motion Picture Bureau in the Department of the Provincial Treasurer. The work entrusted to the Bureau was to prepare films suitable for the dissemination of information of practical value to the general public, and to establish a library of all Government films to be distributed as required by the various Departments.

While a large number of films have been prepared for the various Departments of the Government, this article is intended to briefly describe the work done for the Department of Agriculture and the plan of film distribution to be followed out.

## EDUCATIONAL PROGRESS

Agricultural education, as well as all other forms, has, during the past few years, undergone many rapid changes, and it is becoming generally recognized that the methods which prevailed 10, or even 5, years ago, are not the acme of success to-day. It is still true that much good can be done through the spoken word, but it is also realized that the eye plays an important part in present-day education. Books, addresses and slides interest, and, in a great many cases, whet the imagination, so that people become anxious for more explicit information and to see things as they really are. The motion picture fills this need in that it enables people to see things as they are, and makes impressions on the mind that are lasting and that accomplish much good.

There remains no doubt whatever that the motion picture has completely won over the great public—the many millions who are constantly seeking fresh fields of diversion and

amusement. In the past, the motion picture has been largely a form of town and city entertainment, but of late it is becoming, largely through the efforts of producers and theatres, a live factor in the educational life of these people. It is the belief of the Government that the pictures, depicting life, the efforts and experiences at home, and in other parts of the world, and the fun and humour depicted therein, should be made available to the people of the country and rural hamlets. Motion pictures are being used to supplement the work of schools, colleges, churches, hospitals, etc., and more or less in agriculture.

## PRACTICAL PICTURES

In view of the ever-increasing educational value of the motion picture, the Bureau has prepared for the Department of Agriculture during the past 8 months, some 45 educational motion picture films. These have been made with a view to extend agricultural education by showing the most up-to-date method of general farm work. It is a recognized fact that many in the province have neither the time, nor the opportunity, to visit the Agricultural College, and the Bureau has made a number of films under the direction of several members of the staff of the College, and thus hopes to bring the College in closer touch with the general farming communities. It can be readily understood that it is difficult for all wool-growers in the province to understand how their wool was handled in 1917 at Guelph. The film "Ontario Wool" shows how the wool was graded, stored, weighed, and made ready for shipment. The farmer will readily "see" how his wool was handled, and will be in a better position to prepare for further co-operative selling of wool.



It is not always possible to secure the best type of animal for short course work during the winter months. The films on the conformation of the dairy cow; the heavy draft horse, and the conformation of a beef animal, have been so arranged that where it is not convenient to demonstrate on a live animal the screen may be utilized for bringing to the attention of the audience the important features sought for in live stock. The following is a list of the films prepared and available for general use throughout the province:

Potato Growing.  
Forcing Lettuce in the Greenhouse.  
Greenhouse Tomatoes.  
Pruning Apple Trees of Various Ages.  
The Wintering of Bees.  
Box packing of Apples.  
Marketing the Peach Crop—Niagara District.  
The Marketing of Live Stock.  
Rearing Chickens.  
Incubation.  
Killing and Dressing Poultry.  
The Conformation of a Holstein Dairy Cow.  
The Conformation of a Beef Animal.  
The Heavy Draft Horse.  
The Parts of a Bee Hive.  
Handling Bees.  
The Home Canning of Vegetables.  
Onion Growing in Ontario.  
Celery Culture.  
Forcing Rhubarb.  
The Parts of a Plant.  
The Rural School Fair.  
The Market Types of Beef.  
The Testing of Milk for Butter Fat.  
Judging Competition C.N.E., 1917.  
The Blue Cross Ambulance.  
Ontario Wool.  
The Back Yard Garden.  
Back Yard Garden Methods.  
Back Yard Garden Appliances.  
The Sediment Test of Milk.  
The Acidity Test of Milk.  
The Curd Test.  
Ontario Creamery Butter.  
The Community Canning Centre.  
The O.A.C. No. 72 Oat.  
Treatment of Grain for Smut.  
Growing Mangle Seed.  
Farm Drainage.  
The Provincial Ploughing Match.

In addition to the foregoing, several films of agricultural methods and progress in Northern Ontario are available.

#### DISTRIBUTION

The District Representatives of the Department, of whom there are 45 in the province, have each been supplied with a portable, safe, motion picture machine and storage battery, so that motion pictures may be shown in any part of their respective counties, whether electric power is available or not. It is hoped, by making at least 3 copies of each film, to institute a regular scheme of distribution, which will supply each Representative with 2 or 3 educational films per week. As a supplement to these he will also be provided with reels of comedy, drama, travelogue, etc., so that he can entertain as well as instruct. Already the majority of the Representatives have been supplied with a number of these films, which, in all cases, have been used at short courses and special meetings to good advantage. It can be seen that though the District Representative office is the chief source of distribution, it is but one of many. Others include the county boards of agriculture, association conventions, special meetings, exhibitions, winter fairs, and women's institutes. In connection with the last mentioned organization a three weeks' series of meetings has been arranged in East Simcoe. At each of these meetings, many of which will be held in the smaller villages of the district, motion pictures will be shown, thus bringing to the people of this county a new form of education, entertainment and interest. Other series of meetings similar to the foregoing, are under contemplation and may cover many parts of the province in the near future.

In addition many thousands of farmers and visitors to the Toronto, Ottawa, London and other large fairs, as well as the Guelph winter fair, were given an opportunity of seeing pictures dealing with the dairy cow; the care, shipment and co-operative sale of wool, forest protection in Northern Ontario, etc.



Through the motion picture it is hoped to disseminate reliable information on agricultural subjects of vital interest to the farmers of the province in an interesting, satisfactory manner. The advantage of the motion picture method is that the hand of the demonstrator on the subject matter contained in the pic-

ture is easily seen by every person present, and not confined to the few within hearing or seeing distance of the speaker or demonstrator. These and many other advantages are being seized upon by the Department in its effort to give efficient information and instruction to the mass of Ontario farmers.

## SASKATCHEWAN

### CULTIVATION AND USES OF FLAX

BY W. E. H. STOKES, EDITOR "PUBLIC SERVICE MONTHLY"

**A** NEW linen, or imitation lined, has been produced from ordinary flax grown on farms in Saskatchewan for seed purposes. Some fifty articles made from this new material have been on exhibition at the Parliament Buildings, Regina, and comprise:—

Yarns drawn and spun up to 4,500 feet to the pound ready for weaving into heavy sacking, burlaps, or heavy towelling;

Commercial twines, heavy qualities with glazed surfaces and fine qualities with waxed surfaces, having a wholesale value ranging from 50c to 83c per pound.;

Binder twines of a soft even surface being three ply spun and giving 750 feet and 900 feet to the pound, with a breaking strain at 60 and 50 pounds respectively, not varying more than  $2\frac{1}{2}$  pounds either way.

Tests of this binder twine in the field gave 99 per cent of well bound sheaves, a better result than when sisal twine was used with the same binder.

The preparation and treatment of raw flax fibre is simple and cheap, and can be carried on under cover at all seasons of the year. The treatment gives a spinning value of 4,500 feet to the pound with the permanent qualities of linen, and is immune from the activities of gophers, mice, or crickets.

The acreage under cultivation in the three Prairie Provinces to flax in 1917 was: in Saskatchewan 700,000, in Alberta 230,000, and in Manitoba 63,000 acres, or about 1,000,000 acres in all, which produces on an average  $1\frac{1}{4}$  tons of straw to the acre, a total amount of 1,250,000 tons. The result shown from the manufacture of unretted fibre was that at least 270 pounds of the unfinished article, either yarns or twines, can be made from one ton of straw. Saskatchewan uses about 23,000,000 lb. of twine per annum; there is, therefore, sufficient raw material grown in the province to furnish binder twine to ten provinces having an equal demand.

Western Canada cannot produce linen at a profit. The short season, early and late frosts, dry climate, high winds, and lack of suitable water, with the high cost of labour, make it impossible to produce linen on a paying basis. Machinery has been invented for taking the fibre from the straw without retting.

Early in 1917 there was an association formed under the name of the Flax Fibre Development Association, with headquarters in Regina, with the object of developing the use of flax fibre as distinguished from linen, and its utilization in the manufacture of the coarser commodities. Those forming the association had

previously been engaged in the flax industry, in improving fibre machinery, or in chemical research for the purpose of simplifying the procedure of treating raw flax. Their laboratory experiments having been successfully completed, the Saskatchewan Government, through the Department of

Agriculture, gave financial aid in having experiments carried out on a larger scale, and very satisfactory results were obtained.

The following are the results of the test made of the articles manufactured from the chemically retted flax fibre:—

## SOFT TWINES

SIZE	Average Breaking Strain	Fine Finished Twine, Size	Average Breaking Strain
ft. to lb.	lb.	ft. to lb.	lb.
1st, 750.....	60	1st, 800.....	60
2nd, 787.....	42	2nd, 800.....	40
3rd, 1050.....	37	3rd, 1050.....	7
4th, 1125.....	45	4th, 1500.....	29

## HARD TWINES

1st, 350 ft. to pound, average breaking strain, 123 lb  
2nd, 400 ft. to pound, average breaking strain, 112 lb.

## ROAD DRAG COMPETITION

THE Department of Highways of the Government of Saskatchewan has for several years been conducting a Road Drag competition throughout the province. This year a modification of the rules that have obtained is being made. The competition is open not only to the councils of organized rural municipalities, but also to duly affiliated automobile clubs and duly organized good road associations in Saskatchewan. Entries will be grouped together in such a manner as to form districts with from ten to twelve competitors each.

## THE RULES

Dragging will start officially June next and will end on September 30. Only one entry will be allowed from each municipality, Automobile Club and Good Roads association. The entry of Automobile Club or Good Roads association must be accompanied by the approval of the municipality in which the road entered is located.

The road to be entered must be at least two and no more than six miles long.

Entries will be received up to and including June 1 and no entry will be

considered if it is mailed later than June 1.

Any road which was entered in one of the former competitions will not be accepted for entry this year.

Roads entered in the competition must be continuous grade. New roads to be built this year will not be accepted for entry. Roads graded in former years may be regraded and will then be eligible for entry, but such regrading must be finished prior to June 1.

Every competitor is to put a sign on each end of the road bearing the following legend: "This road is entered in this year's road-dragging competition. (The department of highways will supply, free of charge, to such competitors as apply for same, the necessary signs printed on heavy cotton.)"

The competing roads must be kept clear of weeds and all manner of growth from ditch to ditch, very short grass growing between grade and ditch excepted.

Returns on forms to be furnished by the department of highways must be made regularly every month, and not later than on the date printed at the bottom of the form. They must be filled in complete by both operator and secretary. If returns are withheld until the end of the competition and then sent in a bunch, or if no returns at all are sent, the competitor who in such manner disregards this rule will be disqualified thereby.

## THE PRIZES

The prizes to be awarded in each district will be as follows: First prize, \$150; second prize, \$125; third prize, \$100; fourth prize, \$75; fifth prize, \$50.

The roads of the first-prize winners in all districts will be inspected again after the regular prizes have been awarded, and of these roads the one that is adjudged best will receive a grand prize of \$250, the second best a grand prize of \$150, and the third best a grand prize of \$100.

All the above prizes will be paid in the following proportion: 75 per cent to the competitor winning a prize, and the remaining 25 per cent to the winning operator. This applies to both regular and grand prizes.

The competitive roads will be inspected from time to time during the season, and the condition of the road at the time of entering, the character

of the soil, the amount of traffic and other general conditions affecting it, and the state of the road during the season and when the competition closes, will be taken into consideration in awarding the prizes.

The judging will be done by points and the awards of the prizes will be made by disinterested judges appointed by the Department, the decision of the judges being final.

Roads will be judged along the following lines: Beginning of season—1, condition of road before dragging starts; 2, nature and formation of soil; 3, length of road. During season—4, improvement on road in (a) crown, (b) hardness, (c) smoothness; 5, condition of ditches; 6, freedom from weeds; 7, amount of traffic; 8, general appearance. End of season—9, value of returns.

No withdrawal of a road will be accepted after June 1, 1918.

## ACTIVITIES OF THE DEPARTMENT OF AGRICULTURE

BOYS' AND GIRLS' CLUB WORK  
ORGANIZED

**M**R. J. G. Raynor, B.S.A., formerly District Representative of the Department of Agriculture at North Battleford, has been appointed Assistant Director of Extension and will have full charge of the boys' and girls' club work. It is proposed in the next few months to visit every society, to meet the directors and discuss the advisability and possibility of reaching every boy and girl who is not linked up with some organization whose object is to supplement the work of education.

## CO-OPERATIVE MARKETING

A series of meetings have been held throughout the province with a view to stimulate the co-operative shipping of live stock, and the greater production of hogs. As a result of these meetings and from reports

received by the registrar of co-operative associations it is shown that there has been a marked increase in the amount of stock marketed co-operatively during 1917. Twenty-five associations report having marketed 444 cars of stock during the year. During the previous year twenty-three associations marketed a total of 241 cars. Reports from these associations would indicate a saving of from one-half to as high as one and a half cents per lb. having been made on shipments marketed co-operatively instead of through drovers and buyers.

## LIVE STOCK PURCHASING AGENT

Mr. J. H. Ross, a graduate of the Saskatchewan College of Agriculture, has been appointed Live Stock Purchasing Agent. Mr. Ross thus becomes the chief assistant of Professor A. M. Shaw, recently appointed Live Stock Commissioner.

## BRITISH COLUMBIA

### CONSERVATION OF HEIFER CALVES AND SOWS

THE Department of Agriculture of British Columbia has issued an appeal to the secretaries of farmers' institutes and other farmers for the raising of heifer calves. Farmers having heifer calves, from good producing cows, that they are not able to raise, are asked to notify the Live Stock Commissioner; and those desiring to purchase stock of this class are invited to advise this official of their wants. It is expected that many useful animals will thus be conserved.

With a view to increasing the number of brood sows kept by the farmers, an exchange column is being opened in the monthly Agricultural Journal, which is sent to all members of Institutes. In this column there will be published the addresses of those who have breeding sows for sale and of those who desire to purchase animals of this class. The secretaries of Farmers' Institutes are urged to bring this matter to the attention of their members.

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### WHALE FERTILIZER

The Department of Agriculture has purchased for distribution in the province fifty tons of whale fertilizer. It is manufactured from whale meat and blood, the oil having been extracted.

Analysis shows it to contain 12.4 per cent of nitrogen. It is being sold to farmers and farmers' organizations at approximately \$72 per ton, which includes transportation.

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No effort that has to do with the winning of this war is insignificant or unimportant. No community, no individual, has the right to say that what it, what he or she, can do is of no account. Every extra ear of corn, every additional hog or steer, every day's work on a farm by a man or boy who would otherwise be working or playing in some way not connected with the war, counts in the mighty total of the general effort.—*W. Almon Wolfe.*



# PART III

## Junior Agriculture

DEMONSTRATIONS, COMPETITIONS AND CLASS-ROOM STUDIES IN  
RURAL LIFE FOR BOYS AND GIRLS.

### SCHOOL PUPILS FOR FARM WORK

The Canada Food Board has taken the lead in organizing boys between the ages of 15 and 19 for farm work. Under the caption of "Soldiers of the Soil," the Board has called for the enlistment of 25,000 boys between these ages. Enrolment commenced on March 17th and from that date to the 23rd was known as "Enrolment Week." In towns of under 10,000 population, high school teachers and bank managers acted as enrolment officers, while in larger centres high school teachers, Y.M.C.A. secretaries, together with officers of the Boy Scouts and other boy organizations, enrolled the recruits. Arrangements have been made by the Departments of Education in the several provinces, as detailed below, so that the boys who enlist for this work will not lose their school standing. Every boy between 13 and 19 who gives three months of satisfactory service on the farm will be given a bronze National Honour Badge. In addition he will be paid regular wages, based upon the amount of work which he is capable of doing. The Departments of Agriculture in the various provinces will provide machinery for placing the boys on the farms.

#### PRINCE EDWARD ISLAND

BY H. H. SHAW, ACTING SUPERINTENDENT OF EDUCATION

**L**AST year the Prince of Wales College and Normal School, which is really the only high school in the province, continued its classes during the Easter holidays and discontinued the work on May 10th, instead of May 31st. This year the same plan will probably be

followed. The rural schools were allowed to substitute spring and fall, instead of midsummer, holidays to enable the farmers to take advantage of the assistance of the children at those times. The same option will likely be granted this year.

#### NOVA SCOTIA

**T**HE Department of Education of Nova Scotia is doing everything it can to back up the efforts of the Department of Agriculture to increase production. Much literature has been circulated showing the needs, and, in order to make it possible for the school children to join the army of food producers, the following regulations passed by the Council of Public

Instruction in 1917 are to continue in force during the present year:—

Ordered that pupils certified by the teacher to be standing well in their grades about the first of May who carry out the programme of the National Service Commission and the Provincial Department of Agriculture by being regularly and effectively employed in helping in farm work for four or more weeks between May 1st and the closing of the school term, may (provided during the rest of the term they

are in regular attendance and doing good class work) have their certified days of such employment if sent to the teacher before the last day of the school term in June, entered in the school register and the school return as days of school attendance, and as such draw their legal proportion of the Municipal school fund.

All such pupils with their days of work thus acknowledged as the equivalent of public school attendance, shall be reported by the teacher through the Inspector to the Education Department which will issue a National Service Certificate to such pupils that will be accepted as a pass certificate into the next highest grade in the school and that will exempt the holder at the provincial examination from the fee of \$1.00 for not passing the regular terminal examination of the said grade.

The said National Service certificate will

be accepted by the Education Department as an ordinary pass certificate of the high school grade thus passed in the case of applicants for a Teacher's License, provided there appears to have been no breach of good faith on the part of the teacher or employer of candidate.

To further encourage the good work a sort of catechism has been prepared and published in *The Journal of Education* of the province, in which computation is invited of the quantity of material and amount of money that would be saved by doing certain things and the service that is rendered by canning, drying and preservation of fruit and vegetables when in season.

## ONTARIO

THE boys and girls in the schools of Ontario in 1917 made a good response to the war-time appeals for increased food production. Many assisted in home gardening as a new activity. Many had gardens of their own for the first time. Scores of schools directed the school-gardening work in the direction of war-time needs. The pupils in their rural schools cultivated war plots in the school fair competitions that were directed all over the province by the District Representatives. Groups of high school girls grew beans and potatoes in community plots. Others worked on fruit farms. Boy Scouts exercised team play in potato growing enterprises. Some assisted in caring for gardens at homes where the men were overseas or had been put out of action. Many raised poultry. A few raised pigs. Thousands assisted on farms.

### BOYS AND GIRLS ON THE FARM

In 1916 the Department of Education issued regulations granting examination exemptions to boys for service on the farms. This enabled many to work on the farms from

seeding to harvest. In all, 2,717 certificates were granted on proof of the performance of the required service. Of this number 1,166 were given to boys in the public schools and 1,551 to boys attending the high schools. These numbers represent only those who applied for standing. There are no records for the large numbers who withdrew from the schools and who did not request certification.

For the season of 1917, the regulations were extended to allow girls as well as boys to work on the farms. Owing to the scarcity of help in cheese and butter factories, work in these was accepted for exemption on examination also.

For 1918 the same encouragement is extended to pupils who give three months' continuous service on farms. In view of the scarcity of farm help, and of the world food shortage, even larger numbers are expected to go out to help in greater food production.

### TRADES AND LABOUR HELP

The Trades and Labour Branch of the Department of Public Works, organized late in 1916, took an active

part in this work during the past year. Professors from the university, who had been brought up in the country, were sent to the high schools to explain the great need of help on the farms and to urge boys and girls to enlist for this service. Literature was distributed. Pupils were registered and sent out to farmers who applied to the provincial employment bureaux. The offices of the District Representatives of the Department of Agriculture were organized as county employment bureaux and hundreds of boys placed through them on farms not too far distant from the boys' homes.

In recognition of the service rendered, bronze badges were distributed to all deserving applicants. Over 1,300 badges were awarded to girls, and over 7,000 badges to boys. To win the badges girls were required to have worked three weeks; the boys' badge was given for three months' work on a farm.

#### GOOD WORK BY Y.M.C.A FIELD SECRETARIES

The supervision of the boys was undertaken by the National Council of the Young Men's Christian Association. The province was divided

into five districts and Messrs. Kingerley, Sidenius, Watson, Poole and Geddes, assisted by Mr. Barnes for part of the time, placed in charge. These gentlemen were all experienced as Y.M.C.A. boys' secretaries and were thoroughly in sympathy with the boys in their new experiences.

Working under the direction of the Trades and Labour Branch, and in conjunction with high school principals and District Representatives, visits were made to the boys at their work on the farms. Each field secretary was provided with an automobile and thus was enabled to cover his territory thoroughly. Lonely boys were looked up, discouraged boys were heartened, difficulties were adjusted. Group meetings of the boys were arranged. Camp fires with "stunts" and "sing-songs" were organized. Meetings were held to interest local farmers and townspeople in the "boy-movement." Ministers were enlisted to take a practical interest in the strange boys in their districts. Addresses were given in the churches on Sunday or at mid-week meetings. No more valuable work on behalf of our boys has ever been done.

### MANITOBA

BY R. FLETCHER, B.A., DEPUTY MINISTER OF EDUCATION

THE advisory Board at a special meeting on January 31st, 1918, adopted a regulation whereby pupils in Grade VIII, whose services may be required on the farms this spring, may receive their promotion at Easter on the recommendation of their teachers that they have attended fairly regularly since August last and have covered the course satisfactorily. These pupils will be required to furnish certificates from their employers between June 15th and July 1st, certifying that they were engaged in farm work

during the spring.

We are arranging to hold special examinations during the last week of March for pupils in Grade IX, or in Grade X, who wish to assist in farm operations this spring. This will furnish an opportunity to those students who have attended fairly regularly and covered the work to secure their standing and thus have a clear field when they return to school after mid-summer. It will prevent the granting of standing to those pupils who entered the schools late last fall and who would expect to



be recommended for promotion at Easter if last year's regulations were applied.

Last year we arranged for an examination for Grade XI students in December to provide for those pupils of that grade who might be at

work during the spring, but the number taking advantage of this was so very small that we have decided to conduct only the usual Grade XI examinations this year. We cannot grant exemptions in this grade, as the students go from it to the university or the normal schools.

## SASKATCHEWAN

THE Minister of Education for Saskatchewan has decided that students in actual attendance at a high school or collegiate institute, or at schools doing high school work, and whose services are required for urgent farm operations may, on application to the Deputy Minister, and on the recommendation of the principal or teacher, be permitted to proceed to the work of the next higher form without examination, conditionally: that they have been in regular attendance for at least six months immediately prior to the time of such employment; that their work has been satisfactorily reported upon by their principal or teacher, and that they enter upon their employment not later than June 1 this year. Students complying with these regulations can also be granted cards of admission to the provincial normal school on conforming with the other conditions of admission required by the Department.

### THE REGULATIONS

Following are the regulations *in extenso* adopted by the Department of Education:—

1. All students who are needed to assist in seeding operations shall apply to the teacher, or principal, who shall satisfy himself that the application is made in good faith and in response to a request from a farmer for assistance.

2. The teacher, or principal, shall for-

ward to the Deputy Minister immediately after the pupil engages for employment on the farm the following information —

(a) The name of the student whose application was granted; the name and address of the farmer by whom he is to be employed; and the exact location of the farm.

(b) His confidential report to the Department on the attendance and progress of the pupil throughout the school year.

### Grade VIII.

3. Pupils who have been preparing for Grade VIII diplomas, and whose attendance and progress throughout the year as reported upon by the teacher, or principal, have been satisfactory, shall be permitted to proceed with the work of the First Year (Junior Form, Part I) as prescribed for high schools, without examination.

### Teachers' Examinations and Normal Entrance.

4. Pupils who have been attending a high school or collegiate institute or schools doing high school work, and whose attendance and progress throughout the year as reported upon by the teacher, or principal, have been satisfactory, shall be permitted to proceed with the work of the next higher form without examination, or to enter the Normal School for professional training provided they are otherwise qualified in accordance with the regulations of the Department.

5. Every applicant for promotion or for admission to the Normal School, shall submit to the Deputy Minister of Education immediately at the close of his engagement, a Certificate of Employment from the farmer or farmers by whom he was employed. This certificate shall specify the dates upon which his term of employment began and ended. The location of the farm and post office address of the farmer shall be clearly indicated.



## ALBERTA

BY J. T. ROSS, DEPUTY MINISTER OF EDUCATION

**F**OLLOWING are the regulations adopted by the Department of Education applying to the employment of pupils of the schools on farms:

1. Any student classified in Grade XI or Grade XII who has been in regular attendance until March 31st, 1918, at any school conducted in accordance with The School Ordinance and Regulations in that behalf, who produces certificates or other evidence satisfactory to the Minister of Education that he has been regularly employed in farming operations for at least five weeks during the months of April and May, 1918, and who at the regular Departmental Examinations at midsummer, 1918, obtains twenty-five per cent on each subject or part thereof and forty per cent of the total marks assigned, shall receive such diploma as he would have obtained had he passed such examination on the usual basis, provided that the confidential report required from the Principal shall certify that in his opinion the candidate would have been prepared to pass the examination had he continued in regular attendance until the end of the term.

2. Any student classified in Grade IX or Grade X who has been in regular attendance until March 31st, 1918, at any school conducted in accordance with the school ordinance and regulations in that behalf, who produces certificates or other evidence satisfactory to the Minister of Education, that he has been regularly employed in farming operations for at least five weeks during the months of April and May, 1918, and also a certificate from the

principal certifying that he has done satisfactory work up to that date, and would, in his opinion, be prepared to pass the regular Departmental examination were he to continue in regular attendance until the end of the term, shall receive such diploma as he would have obtained had he passed such Departmental examination on the usual basis, or, on the recommendation of the principal, may be allowed to proceed to a higher grade with the condition that he be required to satisfy the Department with respect to one or more subjects which may not be represented in the prescribed course for such higher grade.

3. Any Grade VIII pupil who has been in regular attendance between October, 1917, and the 31st of March, 1918, at any school conducted in accordance with the school ordinance and regulations in that behalf, who produces certificates or other evidence satisfactory to the Minister of Education that he has been regularly employed in farming operations for at least five weeks during the months of April and May, 1918, and who at the regular Departmental examination at midsummer 1918, obtains twenty-five per cent (25%) on each subject and forty per cent of the total number of marks assigned, shall receive a Grade VIII diploma provided that the confidential statement required from the principal shall contain in addition to the information required by the regulations a certificate to the effect that in his opinion the candidate would have been prepared to pass the public school leaving examination on the regular basis had he continued in regular attendance until the end of the term.

## THE VARIATION IN ELEMENTARY COURSES IN AGRICULTURE

## NOVA SCOTIA

BY L. A. DEWOLFE, B.A., DIRECTOR, RURAL SCIENCE SCHOOLS

**M**R. McCaig's article, given in the March GAZETTE, is good; and doubtless suits conditions in Alberta. In Nova Scotia we are differently situated.

The more progressive of our people have gone west to make the western country, while the conservative ones have remained in the

East. Consequently his "wholesome condition in public sentiment" is not evident here. Moreover, our teachers are practically all young women. In the West there are men enough to assume leadership. In Nova Scotia most of the men still in the teaching profession are past middle age, and still adhere to the classical notion.

Nature study and elementary science are good things if properly handled. Would you, however, expect a girl to teach mathematics if she had had, say, one or two lessons in interest or simple equations without having had even addition and subtraction? That is what we have in agriculture. A student has caught snatches of a few lectures on plant growth or soil cultivation, and then starts out to teach it without even knowing oats from wheat, cauliflower from shepherd's purse, or sand from clay. Hence our agricultural teaching soon brings itself into ill-repute. If we could get our good teachers back from the West, we could do better work.

Our course of study is very good theoretically. It reads well on paper. The practice, however, falls far short of the theory. The teacher excuses herself on the ground that "Nature study and agriculture were never taught in this school before", and, of course, the ratepayers are satisfied with the course as it was when they were children.

Parental influence is somewhat negative until a child wins a prize at a county exhibition, then interest awakens. The school exhibition, therefore, seems to be the connecting link between the school and the home. For that reason we urge it wherever we can.

We get samples of pure science teaching in our high schools. With

the right teacher it is all right, but, with the average teacher, it helps drive the pupil from school. Simple applied science or vocational teaching is more attractive.

In Nova Scotia, we advocate lessons on minerals in mining regions, lessons on fisheries in fishing villages, lessons on gardening everywhere, for in all communities there is room for the back-yard garden. The garden work, the sewing, the canning, and cooking all point towards the exhibition, where the parents learn really what children can do. The school lessons correlated with these activities they never see. But school work is not considered an important thing anyway. Possibly this sounds pessimistic. It is not. Though what I say is true generally, there are notable exceptions. Here and there we have a teacher who is a leader. Here and there a clergyman assumes the community leadership in all worthy activities. In such communities, the people slowly fall into line. The fact remains, however, that the average teacher will not assume leadership. She does what she is expected to do and no more. If she can make the children sit quiet all day she is a good teacher, whether she teaches them anything or not.

Give us good live teachers and we need not worry about the course of study. It will adapt itself to the community.

## QUEBEC

### MACDONALD COLLEGE

BY SINCLAIR LAIRD, DEAN OF THE SCHOOL FOR TEACHERS

IN the Protestant schools of Quebec, 93% of the children are in the elementary schools, and half of these children are in rural schools. The question of agricultural instruction, therefore, has a vital relation to the future lives of half of the Protestant children. This has been recognized by the

Council of Public Instruction, and a strong course in nature study has been authorized on a seasonal basis for the first eight grades. This course includes two lessons a week throughout the whole year for every one of these classes, and a syllabus has been extensively drawn up for the guidance of teachers.

In addition to these lessons, which are more or less general in their nature, and deal with birds, flowers, plants, weeds, the soil, the weather, etc., there is a distinctively agricultural course in Grades 6 and 7, the present authorized book being Hatch and Haselwood's "Elementary Agriculture," together with Calfee's "Rural Arithmetic," which is for the use of the teacher.

The Council of Public Instruction also has under discussion the question of advanced agriculture for high school grades. It has not yet been decided whether it will be made one of the science options for the school-leaving certificate, although there is a feeling in some quarters that it ought to be, because so many children afterwards take up farming, or proceed to an agricultural college for advanced work.

Macdonald College has taken the important step of declaring that one of the requirements for matriculation into the Faculty of Agriculture, shall be the passing of an examination in nature study and elementary agriculture. For those who do not have an opportunity of passing this in the school-leaving examinations, special supplementary tests will be held at the college on entrance. This is an important feature, as it exercises pressure from above on the studies of the school candidates who will proceed to higher agricultural education.

School gardens are rapidly spreading in many of the counties of the province. There are no fewer than 846 school gardens cultivated by 21,217 children. But these are almost all in connection with Catholic schools. There are few school gardens now successfully conducted in connection with the Protestant schools. Many of those attempted have been abandoned because of the difficulty of caring for them during the summer months.

It should be remembered that the rural Protestant population is scattered and the schools have small en-

rolments. In addition, some of the more isolated sections are unable to secure trained teachers through their inability to pay for them, although the number of teachers without diplomas is being rapidly reduced, there being 80 fewer than in the previous year.

#### HOME AND SCHOOL GARDENING

Home gardens, however, have been very successful. Two demonstrators connected with Macdonald College spend their whole time in directing this work, and in organizing school fairs. Several visits are made to each school. The work is explained, the seeds and other materials are distributed, the gardens are inspected, and the school fairs are judged. These projects and school fairs have caught the interest of pupils, parents, and school trustees. More successful work of an agricultural nature has resulted from this scheme than from the previous school gardens.

In my opinion, agricultural instruction will make most progress in the Protestant schools of Quebec by improved attention to the present outline of work, more extensive nature study in the lower grades, better teaching of agriculture in grades 6 and 7, further extension of the work of the two rural demonstrators employed by Macdonald College, and greater encouragement in the school fairs. I firmly believe that the gardening at school under our conditions should be confined to the beautifying of school grounds and their maintenance in good condition. This would mean the planting of trees, shrubs, and flowers, and the keeping of window boxes. If the province should insist on allowing science options in agriculture as well as in physics, chemistry, and botany for high schools, this would still further strengthen the agricultural tendency among children of more mature years, and the work would undoubtedly be more successful.



At present the teachers in training receive a wider course in nature study and agriculture than is necessary to conduct the work prescribed in schools. This policy is adopted in order to prepare them for additional work whenever it is demanded. For the last few years, a summer session for nature study and agriculture has been held at Macdonald College for the benefit of those who did not have

the advantage of the extensive course which is now being given as a regular part of the training course.

In short, nature study and agriculture are encouraged. Pupils get credit for these subjects in written and oral examinations. The difficulty of making the work practical is overcome partly by home projects and school fairs instead of school gardens.

## ONTARIO

BY J. B. DANDENO, Ph.D., INSPECTOR OF ELEMENTARY AGRICULTURAL CLASSES

I have read with interest the contribution by Mr. McCaig concerning a co-operation among the provinces respecting a standard course of study in agriculture for both primary and secondary schools in Canada. In the main, I agree with Mr. McCaig's viewpoint as set forth in this article; and, I might add, that there is no important difference between the scheme now laid down in Ontario, and that in use in Alberta, especially so far as the course of study is planned.

With respect to methods of management of agricultural classes as indicated in the numerical summary given by Mr. McCaig, I may say that with the exception of No. 3 this practice is the same in Ontario as it is in Alberta. With respect to No. 3, I wish to say that we do not study text-books in Ontario; nor do we recommend the use of them. The work will be successful in our schools only so long as it is practical, dealing with *things* and not with *books*. However, by way of reference, extensive use is made of books, bulletins and periodicals.

Mr. McCaig is doubtless correct in saying that in some provinces the work is largely a sort of nature study given under the heading of "rural science." In Ontario we avoid the use of the term "rural science," because it is misleading and erroneous. There is no such thing as "rural

science," any more than there is "urban" or "city science," and no good purpose will be served by preserving the term which seems to have arisen in the Maritime Provinces, where agriculture and nature study are so interlocked that some general term seems to be required to cover the two.

In Ontario, agriculture and nature study are two distinct subjects, the former carried on throughout the eight grades, and the latter through the 7th and 8th; the former is obligatory, the latter optional.

The kernel of Mr. McCaig's article lies in the following paragraph:

In this view it is pertinent to ask the framers of courses of study in the elementary schools whether their work is thought to be satisfied by a camouflage of nature study, by explicit vocational teaching of children, by an assembling of beginnings of pure elementary science, by school gardening dominantly, or by organized elementary agriculture.

For the Ontario schools it is easy to answer the question implied. As has already been stated, recognition is given only to organized elementary agriculture, begun when the pupil enters the 7th grade, and carried on in connection with school gardens or home gardens, and other projects, through the 8th grade. The school fairs are under the charge of the District Representatives of the Department of Agriculture, in co-operation



with the public school inspectors. The District Representatives assist in directing the home projects and, to a certain extent also, the school gardens.

The high school course of study is also distinctly agricultural, being neither sugar-coated elementary science, nor camouflaged nature study. The course of study is outlined in

circular 13 (1) and is framed to cover, for the first part, two years, and, for the second part, two years in advance of this.

For primary schools the course of study and regulations respecting this course are found in Circular 13, 1917, which may be had on application to the Department of Education, Toronto.

## MANITOBA

BY S. G. LANG, INSPECTOR SECONDARY SCHOOLS

**M**R. McCAIG'S article on the teaching of agriculture is a timely one. He inquires into the services rendered by the various agencies of education in the field of agriculture. There are several types of school and several distinguishable branches and methods of instruction. There is also some divergence of opinion as to the place and purpose of these schools and courses. A few of the elements and features of agricultural teaching are indicated in the following questions:

Are there any subjects of study which possess a general educational value, and at the same time have a bias towards agriculture as a vocation?

At what stage should direct vocational instruction begin?

Is it impossible to infuse vocational instruction with elements of broad cultural value?

What are the methods best suited to agricultural instruction in elementary and secondary schools?

Should secondary school agriculture be taught in separate and independent agricultural high schools, or as a regular branch of instruction in the ordinary high school?

Answers to these questions should furnish a fairly comprehensive view of the aims and methods of agricultural teaching within any given system, and the following may be taken as a brief statement of the experience in this province:—

Nature study has done much, no doubt, in forming habits of observation and an enquiring attitude in the field of natural phenomena, and while the general educational value of that form of discipline is very high indeed, it ought to prove of special advantage to the prospective agriculturist. Of the more systematic and ambitious work of elementary science as pursued in the last year of the elementary school, and the first of the high school, much the same may be said. The course has a general educational value of its own, and may incidentally give a certain vocational bias according to the character of the illustrative work in the laboratory.

## INFLUENCE OF THE BOYS' AND GIRLS' CLUBS

The contests and fairs in connection with boys' and girls' clubs are concerned with agriculture and home-making, and members may enter at the age of ten. Of course the educational value of a club contest in the case of a child of ten is to be found chiefly in the play element. But the boys' and girls' club movement promises to exercise a strong influence upon the school and home activities of young people. The inspectors here recognize the danger of too early specialization and over-absorp-

tion in one branch of study to the detriment of the rest, and the desire to limit strictly the number of contests which children, particularly young children, should be permitted to enter. Moreover, while recognizing to the full the value of the boys' and girls' clubs, and the great practical results of the movement, they express the belief that the educational possibilities of the work are not limited to individualistic and vocational elements alone. During the elementary school age, especially, the general educational bearings of this form of instruction in agriculture and homemaking should be regarded as of chief importance, and in the later years of school life the socializing and liberalizing value of agriculture should not be completely overshadowed by the vocational. The experience with book courses in elementary agriculture is not any more encouraging here than elsewhere. But the school and home gardens of Manitoba have come into their own, and along with this there are organized some 150 boys' and girls' clubs with over 15,000 members. As the local or branch clubs are formed, with the school as a centre and the teacher as guide, philosopher, and

friend, it is clear that you have here an effective combination. Nature study, elementary science, agriculture, can be directed and studied in the school garden and the school library. The agricultural laboratory of the country school is in the school and home garden, and the motive of the practical work is in the contests of the boys' and girls' clubs.

## SECONDARY AGRICULTURE

As to secondary agriculture, the plan followed here was to encourage the establishment of agricultural courses under competent teachers in existing high schools rather than independent high schools. It was thought better not to segregate the student of agriculture at that stage, but to find a place for him in our present educational structure, giving agriculture a place co-ordinate with other high school disciplines. Five such agricultural departments were established within the province, but two of these have been closed on account of the enlistment of the teachers in charge. The remaining three afford satisfactory evidence of the value and future prospects of this type of work.

## SASKATCHEWAN

BY A. W. COCKS, B.Sc., DIRECTOR OF SCHOOL AGRICULTURE

I HAVE read Mr. McCaig's article which has reference to the subject of agricultural instruction in the elementary schools. The practice in this province is very similar to that in Alberta, namely, that we endeavour to pass from the nature study basis in the lower grades to school gardening and educational agriculture in Grades VII and VIII. We do not attempt to make it a vocational subject in the elementary school, but regard it of value from the educational point of view, because it enables the school to relate

its activities to those of the community.

The great difficulty is to obtain a sufficient supply of well-qualified teachers for the work. The majority of our teachers are young girls fresh from a short course in the normal school, which followed two or three years of high school work, during which time little preparation for the teaching of nature study or agriculture in elementary schools was made.

The secondary school, to my mind, is the most important factor, both from the point of view of giving

instruction in the science of agriculture to the boys and girls who intend to live on the farm, and from the point of view of the future teacher in the rural schools. We need some kind of rural high school which will have a strong department in agriculture and domestic science and will be associated with all the rural schools in the neighbourhood. The principal of such a school, with his assistants in agriculture and household science, would be able to supervise the work of these young teachers in the rural schools, and would also be able to train the high

school students for the special work of teaching in the rural schools. I sincerely hope that, as a result of the recent survey made in this province by Dr. Foght, some such change as this will be made in our school system, for I believe it will then be possible to make instruction in agriculture in both the elementary and secondary schools much more efficient, but that without this alteration it is almost impossible to obtain anything better than the present rather unsatisfactory and more or less inefficient work.

## POULTRY PROJECT SCHOOL WORK

### NEW BRUNSWICK

BY R. P. STEEVES, M.A., DIRECTOR ELEMENTARY AGRICULTURAL EDUCATION

**W**E propose to organize clubs in the schools at centres where supervision can be had conveniently and where teachers can give to them the time necessary to insure good returns to the pupils in education and profit.

Following are regulations under which we plan to conduct the work:

1. Clubs are to contain not less than six pupils between the ages of 10 and 18 years.

2. Pupils before enrolling must obtain their parent's consent in writing.

3. Each pupil agrees to make careful records of work (on forms supplied), to read literature in connection with the project, to write a composition in the fall on "My Poultry Project," and to hand same to the teacher of the school in which the pupil is enrolled, not later than October 31st next.

4. This Division offers to each pupil who becomes a member of a club, a setting of pure-bred eggs on the condition that for each such setting, one bird (a cockerel) be

handed over to this Department in the fall.

5. Each pupil agrees to exhibit stock from this project work at a school fair, if one is held in the fall, at a place convenient.

6. The composition to be written must contain the history of the work as obtained from the records which accompany it, and also statement of project expenses.

7. The enrolment cards and parent's approvals, properly filled out, are to be collected by the teacher and mailed to this office when the application for eggs is made.

8. Two or three sparsely settled districts where the schools are small and conveniently situated may form a union club, if the teachers of the schools desire, and the school officers are willing.

9. Time and expense will be saved by having pupils hand in their records, reports, etc., to the teacher, who will O.K. them and transmit information to this Division.

10. The teacher of every school in which a club is formed is to have supervision of the work being done by the pupils, and see that the greatest efficiency and success are attained.



## SASKATCHEWAN

BY W. E. H. STOKES, EDITOR "PUBLIC SERVICE MONTHLY"

THE Saskatchewan Extension Department has issued the following suggestions for poultry work by school children:

1. Only one breed of fowls should be allowed on any farm or town property. If fowls of any special breed are being kept at the child's home, only eggs of that breed should be supplied. If more than one child in a family wishes to raise poultry, each should be given eggs of the same breed.

2. Eggs supplied for school competitions should be from flocks which have been rated up, or at least inspected, by qualified poultry-men.

3. Where flocks of pure-bred utility fowls are being kept in, or near, a competition district, such flocks after inspection should be the source from which settings are supplied in that district.

4. Breeds used in school work should be limited to Plymouth Rock, Wyandottes, Rhode Island Reds, with the possible addition of Orpingtons, in a district where this breed is popular, and good stock obtainable. (Preference should be given to solid-coloured

birds and the parti-coloured varieties avoided where possible.)

5. Children should be required to pay for eggs, either in cash or produce or work.

6. Bulletins or leaflets should be given each child which will give explicit directions for every line of work he or she may have to undertake, *e.g.* How to set a hen; care for her during incubation period; testing eggs; care of young chicks, etc. If possible some lessons in school should also cover this ground.

7. Children should elect representatives to an executive which will, at least in part, plan the competitions, and the attractions for their district fair.

8. Each child should agree to keep records of the hatch, feeds and quantities etc., and to show, as required at the fairs, preferably all the chicks reared from the setting.

9. The judge, after making his awards should handle birds for each child to point out the strong or weak features. He should also let the owner know how much each bird is worth. In some places children not knowing values have been persuaded to sell the whole brood at 50c. each, to some unscrupulous adult.

## ONTARIO

## FUND FOR AGRICULTURAL INSTRUCTION EQUIPMENT

AT Sault Ste. Marie, Ontario, the District Representative is co-operating with the School Inspector with a view of having each school that participates in the annual school fair plant about one-third of a bushel of potatoes and

care for them. The trustee boards are asked to provide the seed. It is purposed that the crop shall be sold, and the proceeds used for the purchasing of equipment for giving agricultural instruction in the school.

## INCREASED FOOD PRODUCTION THROUGH THE SCHOOLS

THE Department of Education of Ontario is urging the teachers in the public and high schools of the province to give every encouragement in the direction of increasing the food supplies by

means of school plots, home gardens, and the hatching and rearing of improved poultry. Last year it was estimated that food crops valued at \$55,000 were raised as a result of the effort put forth by the agricul-



tural classes of these schools. Last year the aim was to grow potatoes, beans, and other vegetables, and to raise poultry from selected eggs. The only modification proposed for 1918 is to increase the amount in every way possible. Each teacher is asked to direct the pupils, as a business proposition, to calculate, from market prices available in the

hundred in 100-egg lots to pupils of schools in which classes in agriculture are maintained. The eggs are from an improved Barred Rock bred-to-lay strain, and the introduction of this breed into the rural districts is likely to prove of lasting benefit to the whole country. About 40,000 eggs were distributed under a similar arrangement in 1917.



SCHOOL GARDENS, S.S. No. 2, GLANFORD, WENTWORTH COUNTY;  
TEACHER, MR. E. C. BOUCK

neighbourhood, the total food value produced by the pupils, and to report the result to the Department at the end of the season, in order to show the result achieved.

By an arrangement with the Poultry Department of the Ontario Agricultural College, Guelph, eggs for hatching can be supplied in a limited quantity for May delivery at \$6.00 a

In a circular sent out by Mr. J. B. Dandeno, Inspector of Elementary Agricultural Classes, it is suggested that part of the cost (say one-half) be borne by the school board, and part by the pupils, thus placing the cost to the pupil at so reasonable a figure that the project may be within reach of all.

# MANITOBA

## SCHOOL FAIRS AND BOYS' AND GIRLS' CLUBS

BY GEORGE HUNTER, INSPECTOR DIVISION NO. 5

**B**OYS' and girls' clubs and fairs promise to become a great forward movement in education. Practically every school in six municipalities included in this inspectoral division is organized for this work. The old idea was that education makes a man accomplished. The new idea is that it makes him useful. The idea has come to stay. We generally find that the pupils who take part in these competitions excel in their general school work. The training given the pupils in their general school work in preparation for these fairs cannot fail to have an important bearing upon the future.

They have been trained to observe more closely, to recognize good and bad qualities in their products. They have learned to meet and solve problems. They have learned something as to the cost of production and the keeping of simple accounts. They have learned to read agricultural literature bearing upon their work and personal initiative has been strongly developed. The competitive spirit judiciously engendered stimulates them in the endeavour to excel, and careful habits are formed that have an abiding effect on improved citizenship.

## PLANTING MATERIAL FOR SCHOOL GROUNDS

**P**ROVISION is made by the Department of Education of the Provinces of Manitoba and Saskatchewan for the supplying of trees and other planting material for school grounds. The Manitoba Department of Education is prepared to distribute a limited quantity of trees, shrubs, and herbaceous perennials to the schools in the province which have grounds in a condition for planting. The planting material has been raised on the grounds of the Brandon normal school in connection with the instruction in gardening and forestry. It will be supplied free, but school districts will be required to pay the transportation expenses.

In the province of Saskatchewan, since 1915, the Department of Education has each year supplied trees to nearly one hundred school districts. Most of the trees are obtained from

the Dominion Forestry Station, Indian Head, while the shrubs are supplied by the Provincial Nurseries, Regina. School trustees and other officials wishing to obtain supplies of this material are required to make application at least nine months before the material is needed. The trees and shrubs are then supplied only on the following conditions:—

- (1) The ground must be summer-fallowed in the year previous to planting.
- (2) The ground must have been broken prior to the year in which it is summer-fallowed.
- (3) The proposed belts should be at least twenty-five yards from any permanent buildings unless exceptional conditions exist.
- (4) The necessary information respecting the preparation of the ground as requested by the directors must be supplied before November 1 in the year previous to planting.

# SASKATCHEWAN

## GIRLS' CAMP AT THE UNIVERSITY

A CAMP for farm girls of Saskatchewan will be held at the College of Agriculture, University of Saskatchewan, Saskatoon, from June 17 to 21, 1918. This camp will be limited to 200 girls between the ages of 16 and 20 years. Agricultural societies are authorized to send two girls each, but no acceptance will be made after applications shall have been received from the

first 100 societies. Last year about 60 girls accepted the opportunity of attending the camp at the college, and the results are regarded as most encouraging to the girls, to the authorities of the University, and to the Department of Agriculture. This year, as last, the Department of Agriculture has agreed to assist in the matter of refunds of railway fares.

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## A MUNICIPAL AGRICULTURAL SCHOOL

BY A. KENNEDY, INSPECTOR OF SCHOOLS

REFERRING back to my article in the January number of THE AGRICULTURAL GAZETTE suggesting the establishment of a municipal agricultural school, I would like to enlarge upon the views there set forth, and to enter upon details of the proposition as they present themselves to me.

Statistics of the attendance at the public schools seem to imply that hardly more than 6 per cent of the pupils advance any further. This would appear to be due in large part to the fact that only a small percentage of the youths find opportunity for satisfying their ambitions in the secondary schools. A considerable portion of the difficulty in connection with the public school problems appears to lie in the fact that comparatively few of the public school children, or their parents, find sufficient attraction beyond grade eight in the opportunity for their development.

The university has been able to gather together, in harmony, upon one campus, colleges of various types, so that there would appear to be no good reason why two or more

types of secondary schools should not flourish side by side. The high schools and collegiate institutes have ample work to do at present, in preparing the youths for the normal schools and colleges of the university; in many respects they could not and would not meet the requirements of many of the youths with ambitions along other lines.

### ADVANTAGES THAT WOULD ACCRUE

The rural municipality has been found most convenient for administrative purposes in the work of the municipal councils and the municipal agricultural societies. In view of the value of such democratic governmental institutions, a municipal agricultural school might well be one of the first variations from the high school among the secondary schools. A quarter section of land at or near the municipal centre would be a sufficient site for the practical demonstrations, and would also provide a very considerable portion of the revenue required for the operation of the school. The erection of the



necessary buildings would provide practical material for manual training purposes, while the solution of the living problems would furnish ample material for the household science classes. Such a school would be within reach of the homes of the youths, so that parents would not hesitate to send the boys and girls for a considerable portion of the week; much valuable help to both parents and youths would result from the opportunity to assist with the farm-work during the seeding and harvest seasons. The special interest of each student, as well as his particular capacity in executive matter, would find opportunities in the operation of the farm, in work, study, and play.

#### THE BUILDINGS

In the erection of the buildings I would advise following the plan of the university rather than that of the secondary school building, according to a pre-arranged plan, as necessity required, rather than starting with a complete building and a heavy debenture indebtedness. The complete plan might well include provision for municipal offices, for the municipal council, an auditorium for municipal gatherings, gymnasium, etc. The agricultural society might also be accommodated on the grounds and in the buildings at the time of their annual fair, thus saving much in outlay for grounds and buildings which are used only one or two days in the year.

#### THE PLAN OF MANAGEMENT

The Municipal Rural Education Association, as now being organized and established, will find great opportunity for useful work. An elected executive of seven men and women, with an appointed secretary-treasurer, could manage practically all the educational activities, including school exhibitions, boys' and girls' club contests, as well as acting as a board of trustees for the Municipal

Agricultural School. There are infinite possibilities in the propaganda of such an association. Not the least of these would be the indirect inspiration given to the work of the public schools within the municipality.

#### THE SECRETARY-TREASURER

The office of the secretary-treasurer of the Municipal Rural Education Association holds wonderful possibilities in respect to public service. A well-trained teacher, with agricultural training, could fill this office best, acting as an assistant to the inspector of schools, especially in respect to household science, manual training, school gardens, and organized play. He would be the executive in matters connected with the school exhibitions held at the municipal centre; he could encourage and guide the club contests, in which boys and girls up to 18 years of age would participate, and could act as judge in the three or more judgments required during the year. In addition, he might well organize and direct short courses, especially during the winter; might act as secretary-treasurer of the agricultural society, and even, if required, as municipal truant officer. In his visits to the farms throughout the municipality, he would find many opportunities of assisting the farmers, and would thus prove a useful agricultural secretary. Such an office could command a salary up to \$1,500, with \$500 for expenses. If this amount were levied by the municipal council it would amount to only \$125 per school district, or thereabouts. The assistance afforded and encouragement given, not only to the boys and girls in the public schools, but also to the youths in attendance at the municipal agricultural school, and also those at home on the farm or in the village, would amply justify the expenditure.

Instances are quite common of "homesteaders" who began ten years ago with only the quarter section,



and very little capital, and who today possess well-cultivated farms, with beautiful homes; they have been able to make a comfortable living and to educate their children. An executive of seven should then be able to finance the Municipal Agricultural School, without appreciably increasing the tax rate.

#### THE PRINCIPAL

An interested, energetic, well-trained principal, and his equally interested, energetic, well-trained wife, could direct the work of the farm, and the farm home, as well as directing the reading and study during the evening hours. The study and class hours would be governed by the activities of the varying seasons. A reading-room, well stocked with current journals and magazines, and a library provided with suitable books, would supply most of the students' needs, and would also serve as the foundation for a municipal library. I would advocate no examinations save for those who wish to enter the Agricultural College or similar institutions.

#### THE LOCATION

A tract of some twenty acres, either a portion of the quarter section or a separate plot in or near the municipal centre, would serve as municipal athletic grounds, as well as providing accommodation for the annual fair of the agricultural society. This point has already appealed strongly to the people of Cymri R. M. 56, the board of directors having recently purchased a site of twenty-two acres in Midale for the purposes of the agricultural society as well as providing for the future needs of the R. E. A. of R. M. 36. The executive of this municipal association has already considered the matter of permitting the boys and girls to experiment in the planting of trees, shrubs, and perennials around this plot; even the erection of the buildings might be left to the

boys from 14 to 18 as a beginning in manual training.

#### STANDING OF THE SCHOOL

In so far as the College of Agriculture is concerned, I believe the organization of such municipal agricultural schools would not only assist greatly in promoting the work of such college, but would be the means of affording greater support to the provincial institution, both in interest and in students. Just as we have three steps—public school, secondary (high) school, and university (arts)—so we would have three steps—public school (with school gardens), municipal agricultural school, and college of agriculture. The municipal agricultural school should then be related to the college of agriculture in a manner similar to that in which the high school is related to the university faculty of arts.

#### OBJECTIONS

Certain objections will naturally be offered against the proposed municipal agricultural school, and perhaps these should be noted and met. I cannot, after consideration, feel the force of the argument *re* the "isolation of those intending to be farmers." We have isolation in all phases of education, including the elementary schools, urban and rural, as well as in the secondary, including technical schools. Even in the colleges we find isolation, without objection. Provided the municipal agricultural school filled a community need efficiently, the isolation would not be felt more than it is today in the case of the rural school.

As to certain objections noted on the basis of conclusions drawn from certain surveys, I feel that the facts warrant the conclusion that those intending to be farmers should have fuller opportunity for a proper secondary education. The high school system has failed to attract, or to provide for, these youths, while

providing for the youth desiring to enter almost any other line of life-work.

#### ADVANCEMENT NEEDED

Further, conditions have changed, and are still changing rapidly, so that the equipment of the youth of to-day must be vastly different from that of the youth of a decade ago. While

I admit the necessity, for many reasons, for the improvement of the elementary schools in rural communities, I feel that the facts of to-day demand that the State provide more adequately and fully for the youth wishing to keep abreast of the times in agricultural lines. Economic conditions demand a more intelligent citizenship and a more efficient type of artizan.

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#### SUPPLIES OF SEED FOR SCHOOL GARDENS

FOR the past two years teachers and pupils in the province of Saskatchewan have been able to obtain from the provincial Department of Agriculture seeds of vegetables, flowers, cereals, etc., for their school garden work. This year the Department of Education is supplying these seeds at a price of three cents per packet. The vegetable seeds are chiefly for garden crops, although mangel wurzel is

also included. The flower seeds are all of annual varieties. The cereals include Red Fife and Marquis wheat, Banner oats, O.A.C. No. 21 barley, and Premost flax. Clover seeds include Red and Mammoth clover and alsike. The grass seeds include timothy, Western rye, Red Top, Kentucky Blue and Canadian Blue. The seeds of Manitoba Maple and White Ash are also supplied at the same price.

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## PART IV

### Special Contributions, Reports of Agricultural Organizations, Publications and Notes

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#### THE QUESTION OF A NATIONAL FLOWER

SINCE the movement was set on foot to bring about the selection and official recognition of a national flower for Canada, as outlined in THE AGRICULTURAL GAZETTE for January, many letters have been received favourable to the idea, and a few raising the question whether or not there is need of an emblem in addition to the maple leaf. At a meeting of the central committee, consisting of Mr. W. T. Macoun, Dominion Horticulturist; M. F. E. Buck, landscape specialist of the Experimental Farms; Dr. M. O. Malte, Dominion Agrostologist; Miss Faith Fyles, Botanist, Experimental Farm; Mr. J. M. Macoun, Botanist, Department of Mines; Mr. George Simpson, President of the Ottawa Horticultural Society, and Mr. J. B. Spencer, Editor of THE AGRICULTURAL GAZETTE, this aspect was discussed. It was then pointed out that both the maple leaf and the beaver are emblematic of Canada, and will always remain so, both being used in national devices. It is, therefore, concluded by the central committee that it is not a question of substituting a flower for the maple leaf, since the maple is the typical Canadian tree, as the oak is of Britain and the American elm of the United States. The object in view is to select a flower which will be typical of the Dominion of Canada, if one can be decided upon that will represent most parts of the Dominion.

The reasons given in the previous

article for advocating the choice of a national flower may be supplemented in a subsequent number of THE GAZETTE; in the meantime, many of the letters sent in by correspondents will be of interest to its readers.

The committee had brought to their attention the fact that during the past fourteen years the majority of the states of the American Union have selected state flowers, and that the question of a national flower for the United States is now before the senate. Last June a joint motion was introduced into congress by Mr. J. H. Stevens to adopt the Mountain Laurel (*Kalmia latifolia*) as the national flower of the United States.

It is felt by the committee that, in view of the fact that Canadian flowers will be required for planting on soldiers' graves, the present is quite an opportune time to select a national flower. The authorities at Kew have already obtained seed from the Experimental Farm, and have raised several varieties of maples to plant on the avenues running through the burial grounds which are under the direction of the War Graves Commission.

The committee also considered the question of provincial flowers, but it was felt that the first thing to do was to find out the sentiment and feeling toward a national flower, and, if one is adopted, it is expected that the provinces will follow and choose provincial floral emblems.

## IDEALS TO BE KEPT IN MIND

BY L. A. DEWOLFE, B.A., DIRECTOR OF RURAL SCIENCE SCHOOLS, NOVA SCOTIA

The article on page 86 of the January issue of THE AGRICULTURAL GAZETTE, relative to a national flower for Canada, is timely. The six flowers named by the association are all attractive and interesting. I feel like taking exception to some of them because they do not grow wild throughout Canada. Of those named, probably the perennial aster is the one most generally distributed.

To my mind the national flower should be one that will stand transplanting; it should have a long season of blooming; thrive on a variety of soils; be good for cut flowers; and be a native species.

Possibly no flower possesses all these qualities; but these ideals are worth keeping in mind in the selection.

Though I have very little to offer in favour of the following flowers I suggest that they might be considered Lupine, Clover, Violet, Wild Rose, Lambkill (Kalmia), Mallow Lily, Great Willow Herb.

Notice, I have not said what species of these flowers should be chosen. Discussion will bring out the virtues of any of these that may be worth adopting. I mention them because some species of each genus has established itself in, or is native to Canada.

## WHY A FLOWER FOR CANADA ?

BY A. H. MACKAY, B.A., LL.D., CHIEF SUPERINTENDENT OF EDUCATION, NOVA SCOTIA

In reference to the proposal made on page 86 of the January number of THE AGRICULTURAL GAZETTE, why a flower for Canada? The Dominion has a tree—the maple; the provinces—flowers. Nova Scotia has its *Epigæa*, New Brunswick its *Linnæa*, etc.

If we are to have a flower for the Dominion, we must get trees also for each pro-

vince to be symmetrical. But that will require a rather large arboreal, as well as flora, pantheon for us to worship in—where we cannot see our flowers for the trees.

No flower can be appropriated for Canada—not even the humble, graceful, beautiful iris, the only possible one in the list of suggestions.

## THE PAINTED TRILLIUM

BY BROTHER M. LEOPOLD, OKA AGRICULTURAL INSTITUTE, LA TRAPPE, QUE.

After giving some thought to the subject of a national flower for Canada, this is what I beg to submit to you on behalf of the Oka Agricultural staff of professors:

It seems that a national flower should be found in all parts of Canada, and in Canada alone, or at least on the American continent and should not be a cultivated plant alone.

Among the beautiful wild flowers of Canada, I would place in the first instance the

1. Painted trillium (*Trillium erythrocarpum*). Trille à fruit rouge, also called in English "smiling wake robin."

Except for three or four species native to the Himalayas and Japan, the trilliums, or wake-robins, belong to North America. Few choicer flowers adorn our woods and forests. They are odd plants, with the whorl of three leaves and the single large flower. Sometimes the flower is stalked, sometimes it is not.

The painted trillium is the most delicate of them all. The dark green leaves set off to great advantage the white or pale pink petals, exquisitely pencilled with deep wine colour. It is a shy plant, confining itself to cold, moist woods and bogs. The flowers open in May around our country.

2 The flags are not natives of Canada alone, as in Europe there are so many beautiful kinds and they grow in such abundance that it would be strange if they would not attract lovers of nature.

Blue flags, yellow flags, flags all freckled.  
Which will you take? Yellow, blue, speckled?  
Take which you will, speckled, blue, yellow.  
Each in its way has not its fellow.

—Christina Rossetti.

Anemone *Canadensis*, Anemone *de Pennsylvanie* Anemon is another quaint little white flower found all over Canada, but I would prefer to it the trilliums or the columbines.

## THE COLUMBINE COMBINES FAVOURABLE FEATURES

BY V. W. JACKSON, PROFESSOR OF BOTANY AND BIOLOGY, MANITOBA AGRICULTURAL COLLEGE

I have read the article in the January GAZETTE with respect to a national flower for Canada. The idea is a very good one,

and commends itself to the consideration of a conference on this matter.

In view of the fact that the fields of



Flanders are to be the new home of Canada's national flower, horticultural considerations become greater than characteristically Canadian ones, and I think that the columbine combines the most favourable features. It is typical Canadian (*Aquilegia Canadensis*), and responds well to horticultural treatment, i.e., it would transplant readily, and can be easily grown from seed. It makes a quick growth and a good showing. Its blood-red colour is quite in keeping with the blood that has been shed on the

fields of Flanders, and its drooping habit quite characteristic of the modesty and resignation of those who fell. Westerners might be inclined to favour the anemone, either *A. Canadensis* or *A. Patens*, the prairie crocus, for the columbine is not found west of the Red River, except in an occasional ravine or cooliee, whereas the anemones extend across the prairies to British Columbia. However, taking all things into consideration, the horticultural advantages favour *Aquilegia Canadensis*.

### THE CROCUS POPULAR IN THE WEST

BY W. MURRAY, M.A., LL.D., PRESIDENT, UNIVERSITY OF SASKATCHEWAN

Canada is so very large and diverse that I fear that the national flower that would appeal to one part of the country would be almost unknown to another. The Canadian thistle is wide-spread enough to get general recognition, but no one wishes to do it honour. It was honoured in Scotland because of historical service which it had rendered. The mayflower would be very popular in the Maritime Provinces, and the crocus in the West.

The rose, I suppose, would be a favourite in British Columbia. I think the selection of a national flower in this way is artificial, and will never catch the popular imagination. Some day something will happen that will give one flower a place in the thoughts of the people, and it will then become naturally the national flower. Would you regard the maple leaf as a sufficiently national emblem to take the place of a national flower?

### THE MAPLE LEAF A SATISFACTORY EMBLEM

BY G. FRED. McNALLY, PRINCIPAL, NORMAL SCHOOL, CAMROSE, ALTA

At a combined meeting of the students and staff of the Camrose normal school held on Friday, February 8th, it was decided that this organization did not approve of the suggestion that a national flower be selected for Canada.

The feeling was unanimous that the maple leaf was a satisfactory emblem, and that it would serve all the purposes which

would be served by the selection of such a flower as was named in the suggestion contained in THE AGRICULTURAL GAZETTE.

It did not appear to me that, from the standpoint of this part of the country, at least, any one of the flowers named could sufficiently embody, or was itself sufficiently characteristic, to make a choice desirable.

## VACANT LOT CULTIVATION

### EXPECTATIONS AND PLANS OF THE CITIES OF CANADA FOR THE PRESENT YEAR

**A**LTHOUGH, in the majority of cases, plans for the present year regarding vacant lot gardening were still under consideration when the replies were written that have been received in answer to a series of questions addressed to the different cities that were known to have had systems in operation in 1917, as recorded in THE AGRICULTURAL GAZETTE of December, they indicate that the success then

achieved, and in previous years, has proved most encouraging, and that the experience gained will be put to good practical use this year. In fact the methods adopted produced such excellent results that, in the majority of cases, there will be no change in organized operation for the approaching season. It is evidently felt that, pressing as the necessity was in 1917 for not alone every farmer, but every citizen, to aid in greater pro-

duction, the necessity for such work and such effort is far more pressing in 1918. All the cities in the country, and many towns, have awakened to the occasion and are bestirring themselves in the task of making productive what has previously been considered waste land, and, as such, has been allowed to lie idle.

When it is considered that in Montreal alone, vegetables to the value of \$100,000 were grown last year, it is not difficult to believe that in all the cities and towns together, the productive worth of the efforts put forth amounted to a number of million dollars, which means that food stuffs of that value that would otherwise have been consumed in Canada were released for shipment abroad.

During the past few months many meetings have been held, at each of which emphasis has been placed upon the needs of the allied powers, caused mainly by the awful waste to be attributed to the wanton use of the submarine, but also due to the ravages of active warfare, and to the ever-increasing demands of the fighting forces. Lurid and past bounds of imagination that the statements that have been made appear to be, there is too good reason to believe that they fall short of the actual truth. Hence the reports of redoubled vigour in vacant lot cultivation that have been received by THE GAZETTE, and which are briefly summarized in the following, will be read with satisfaction.

While the need of the moment is overwhelming, the experience that is being gained from the movement, and the lessons that are being learnt, cannot fail in their far-reaching beneficiality to be ever profitable. Nor is it only from the actual task that knowledge is forthcoming, for in every city instructive lectures and practical demonstrations are being given for both old and young, and for men and for women. In Vancouver an experimental garden and open-air college have been estab-

lished, and in other places arrangements have been made so that instruction shall not be limited to the preparatory season, but shall extend all through the growing, even to the harvesting and the succeeding preservation and conservation.

By the following summaries of the reports made to THE GAZETTE, it will be noticed that in every instance, greater achievements are expected in 1918 than in 1917, gratifying as were the results last year:—

### QUEBEC

*Montreal.*—The success achieved last year was so great that the same plan will be followed this year. The Montreal Cultivation Committee has the matter in hand and will organize a number of sub-committees known as vacant lots committee, farm areas committee, home gardens' committee, planting committee, finance committee, municipal committee, publicity committee and ladies' committee. These sub-committees in turn will interest other people who undertake the supervision of certain districts. All the work is entirely voluntary, the expenses being met by private subscriptions. It is anticipated that the number of lots applied for last year, namely 2,000, will be greatly exceeded this year. The City Council has been asked for the same grant as last year, viz., \$2,500. The securing of seed is left to the individual cultivator. Last year the committee paid for ploughing, but this year former plot-holders will dig their own lots. New land, however, will be ploughed by the committee and the actual cost charged to the cultivator. The interests of returned soldiers and their relatives or connections will be taken charge of by the Khaki League. The chief departure will be the encouragement of the group system as an addition to the individual system of 1917. It is hoped to interest groups to take up and operate co-operatively from one to five acres.

*St. Lambert.*—The Horticultural Society will again have charge of the vacant lot campaign. The town council will assist by ploughing and harrowing the land for cultivators, each of whom will be allowed to get his own seed. It is anticipated that more lots will be cultivated than last year, when the number totalled about 150. No charge will be made for lots and a supply of stable manure will be available for those willing to pay cartage. A course of instructive lectures is being given by expert horticulturists from Macdonald College, and the Horticultural Society will give prizes for the best cultivated new gardens and for canned vegetables.

*Westmount.*—The same plan will be pursued as last year, the city taking charge of the work aided by the Montreal Horticultural Society and the Montreal Florists' Club. The city of Montreal has consented to the use of part of Baldwin Park and will plough the ground free. The city of Westmount will plough lots in its municipality for soldiers or soldiers' families free. Donations of seed are made and the gardeners start the same in their green house, the plants being distributed about Empire Day. Last year over 20,000 plants were given out in this way. It is anticipated that 300 lots will be cultivated of 2,500 square feet each. Soldiers and their families cultivating lots will not be asked for any fee, but seeds and plants will be given them and the ground ploughed and in some cases fertilized.

### ONTARIO

*Brantford.*—The Brantford Thrift League, composed of representatives of the Trades and Labour Council, Social Service League, Rotary Club, Travellers Club, Board of Trade, Board of Works and a committee of the City Council, will have charge of the work. The Council will subscribe \$100 to the fund to cover the cost of advertising and ploughing for soldiers' wives or returned soldiers. Arrangements will be made with seed merchants for a special rate to be charged to lot-holders for seed. It is expected that at least 1,000 lots will be under cultivation. The land will be free, but ploughing and preparing will be charged for at absolute cost, excepting as regards soldiers and dependent relatives. Each of the schools will have community lots.

*Galt.*—The Vacant Land Production Association of Galt will conduct affairs on the same plan as last year. They expect from 300 to 400 lots to be taken up, covering an area of 100 acres or more. The work is supported by voluntary subscription and anything undertaken for the lot-holders will be charged back to them at actual cost. Soldiers, either returned or otherwise, and their relatives will have the preference in the choice of lots.

*Guelph.*—The Guelph Horticultural Society, the Board of Trade, Trades and Labour Council, the Consolidated Separate and Public Schools, Sunday Schools, Y.M.C.A., Ontario Agricultural College staff, and a number of land owners, co-operate in the work, the Horticultural Society taking the lead. The city grants \$500 towards expenses. Vegetable seeds will be supplied at cost, and the distribution will be largely undertaken by members of the Horticultural Society. Last year there were 2000 members and 1700 or 1800 gardens were cultivated. This year it is anticipated that there will be more. Under the heading, "Soldiers of the Soil," cards pledging service are widely distri-

buted and freely signed. Every boy and girl under 18 is invited to enlist in the garden service corps, members of which who cultivate a home, school or vacant lot garden raising a crop of vegetables valued at not less than \$5, for boys or girls from 10 to 14 years of age, and \$10 from 14 to 18 years of age, at current market prices, will each receive a bronze button recognizing national service. Instructive talks and illustrated lectures will be given and press notices made. Literature will also be circulated. Gardens will be judged twice during the season and three cash prizes will be given in each ward.

*Kingston.*—The work is done through the Board of Trade, Board of Education, and a school garden committee. No change is to be made in the management this year, except, as the secretary says, as regards the putting forth of increased energy. A grant will be made by the city for ploughing, harrowing, and discing the same as last year. The school garden committee is giving a grant for the purpose of buying seeds for distribution to school children. It is expected that about 200 acres will be under cultivation. Patriotic citizens will, provide funds to meet any expense incurred. No charge will be made to lot-holders. Ploughing and fertilizing will also be done, as far as possible, entirely free from cost. Soldiers and their relatives will be treated no differently to ordinary citizens except that they will be given the first consideration in everything.

*London.*—The McClary Welfare League and the Street Railway Potato Syndicate will carry on this year the same as last. The McClary League have bought a car of seed potatoes and contracted for vegetable seeds which will be distributed to the holders of 125 lots, comprising about 15 acres. No charge is made to lot holders and their lots will be ploughed free. Instructive lectures will be given every two weeks and supervision be taken of the gardens.

*North Bay.*—The Vacant Lot work here is entrusted to an organization composed of a committee of councillors assisted by interested citizens. In order that he may give more of his time to the vacant lot gardening work, a chairman will be appointed from the city council who will be relieved as far as possible of other duties. Railway property will be leased, divided into plots and given to any citizen promising cultivation. Private owners of vacant lots will also be requested to surrender them for the same purpose. About 1,000 lots covering 150 acres will be operated. The undertaking will be financed through the municipal council. No charge will be made to lot-holders and no assistance rendered further than the purchasing of seed and re-selling at cost. The children will be encouraged by the offering of prizes for the best results.



*Ottawa.*—The only change in the managerial operation of the Ottawa Vacant Lot Association will be that plot-holders will be charged a fee of one dollar, which will make them members of the Association. The societies associated with the work, besides the Ottawa Horticultural Society, are the Rotary Club, Women's Canadian Club, Soldiers' Wives League, *Journal* Printing Company, E. B. Eddy Company, Citizen Horticultural Society, and Boy Scouts. Last year the city granted \$500. It is anticipated that more than 1,200 plots, and exceeding 100 acres in extent, will be under the supervision of the association. Voluntary donations will help in the financing along with the city grant. Lot-holders, so far as possible, will be helped to secure seed potatoes, tomatoes, cabbage, etc., at a low price. Manure will also be supplied as far as possible. The Soldiers' Wives' League are allotted an area and are given the same treatment as other lot-holders. Last year this particular organization did exceptionally well.

*Port Arthur.*—The Garden Club assisted by the City Council and Board of Trade will manage the situation on the same plan as last year. The Parks Superintendent will be general overseer and the city will be divided into districts, each in charge of a volunteer assistant. The City Council will do the ploughing and harrowing and charge one dollar for a 33-foot lot. The City Clerk's office staff will secure the lots and register members. The Parks Board will grow plants in a nursery for lot-holders. Orders for seed have been placed with the dealers and will be sold to cultivators for the same price as given for them. Currant and berry bushes will also be supplied. Lots for the wives of soldiers, or widows of soldiers, will be ploughed free and any other assistance that can be given will be forthcoming. Extra exertions are being made to encourage boys and girls in gardening. Advertisements on an extensive scale are being inserted in the local papers with a view to general encouragement.

*St. Thomas.*—Last year's representative organization having been found unwieldy the Horticultural Society will have full charge this year of the vacant-lot-garden idea. The city will assist to the extent of \$300 and will give a grant of park land. A quantity of seed has already been ordered and will be disposed of at wholesale prices. A car-load of Irish Cobbler potatoes from New Brunswick has been placed at the disposal of the Society. No charge will be made for lots, but ploughing and harrowing will be charged for, except in the case of the families of soldiers, on duty or returned. Lots have been specially donated for cultivation by school children.

*Toronto.*—The Vacant Lots Association and the Rotary Club, represented by twenty executive members, will have

charge of the work this year, the same as last. An effort is being made to double the number of gardens. The city will make the same grant towards the work as last year, and will give the use of all vacant city property, besides ground enough for about 40 gardens in several of the parks. Orders for fourteen varieties of seed have already been given and \$2 will be charged for seeds sufficient for a lot of 5,000 square feet. Lot-holders will procure their own seed potatoes. The seeds that the association has secured will be distributed, as follows:

- $\frac{3}{4}$  oz. Carrot, Nantes.
- $\frac{3}{4}$  " " Oxheart.
- $\frac{1}{4}$  " Lettuce, Nonpareil.
- $\frac{1}{4}$  " Cucumber, White Spine.
- $\frac{1}{2}$  " Squash, Green Hubbard.
- $\frac{1}{2}$  " Parsnip, Hollow Crown.
- 1 " Beet, Detroit Red.
- 1 " Beet, Egyptian.
- 1 " Onion, Yellow Globe Danvers.
- 1 " Turnip, Table, Swede.
- 1 " Radish, Turnip, White and Red.
- 2 " Nasturtium, Dwarf Mixed.
- 1 lb. Beans, Wardell's Wax.
- 1 " Corn, Golden Bantam.

It is possible that the gardens will reach a total of 1,500, covering possibly 250 acres, against 826 gardens and 150 acres last year. The association will do the ploughing and harrowing and even the manuring, where possible, free. The free use of spraying machines will also be given and poison supplied for insects. Lectures are being delivered in different parts of the city and a demonstration plot will be maintained to show cultivators how to sow, plant and encourage growth. Returned soldiers, or their relatives, or connections, will be supplied with everything absolutely free, including seeds and help during the season. When necessary, the gardens will also be planted. The association has a number of plots that will be cultivated by school children, by boy scouts, and by girl guides. Any school principal or teacher can have a plot for the benefit of the scholars. Mr. George H. Baldwin, F.R.H.S., is the moving spirit in the association.

*Stratford.*—The same plan will be followed this year as last. The representatives of the City Council, the Horticultural Society, the Park Board, Public School Board, and the Principal of the Normal School and Public Schools of the city, forming the controlling organization. The City Council grants a sum of \$200 to defray the cost of ploughing the gardens and lots of the soldiers' dependents, advertising, etc. The application for lots last year numbered 156 and this year will exceed 300. The lots average 25x100 feet to half an acre in extent. Private subscriptions are relied on for financing the campaign. Lot holders will pay the exact cost of ploughing and harrowing. Returned soldiers and the



families of returned soldiers will have their gardens and lots put in planting condition free of charge. Literature and advertising matter will be distributed among the children and students of the different schools to take home to their parents. Prizes will be given for plot-holders at a vegetable show to be held in the fall for which no entry fees will be charged, and at which all amateur growers within the city limits will be invited to compete.

### MANITOBA

*Winnipeg.*—The Weston Agricultural Society is the principal mover in the vacant lot gardening work. Prizes of \$5, \$3 and \$2 will be given for the best care, cultivation, and results, besides those offered at a special exhibition. In addition to the work done by adults, it is expected that over 1,500 children will be occupied in the work this year and will compete for a prize shield given by ex-Mayor Waugh for the best work of children under 16 years of age. The city will be divided into districts and the district having the ten best gardens making the highest score will win the shield. The points given in judging will be for quality of plots and effort 40, freedom from weeds 30, layout 20, variety 10. The society will give prizes ranging from \$2 to 25 cents for the ten best gardens in each district, also prizes at the school fairs for the individual exhibit of vegetables and flowers. This year encouragement will also be given to poultry and bee-keeping. The city will make a cash grant and plough lots not exceeding one-quarter of an acre for \$1 each. Each individual will have to secure his own seed. The society will have under its supervision about 300 lots covering an area of 20 acres, which is double that of last year. A dollar per lot will be charged for ploughing and 50 cents per lot for discing and \$1 for membership. Lectures will be given by Professors from the Agricultural College and expert gardeners. Gardens will be visited and notes made of results. The School Masters' Club is an organization authorized by the Board of Education that has an enrolment of 2,000 juvenile applicants for garden lots. Committees have been appointed to make the allotment, to circulate literature, and to help in gardening. The women teachers are taking much interest in the work. Domestic Science teachers will give instruction in preservation. The Winnipeg Gardens Society, the Elmwood Cottage Garden Society and the Winnipeg Horticultural Society are co-operating.

### SASKATCHEWAN

*Regina.*—The Vacant Lot Garden Committee has been transformed into the Regina Food Production Association, which includes representatives of the city council, board of trade, army and navy veterans,

the golf club, collegiate institute, horticultural society, ministerial association, rotary club, public schools, Y.M.C.A., civic economics committee, St. Andrew's society, Co-operative Consumers' league, vacant lot gardening association, boy scouts, Regina College, the Bureau of Public Welfare and other organizations. The fee for a lot has been raised from \$1 to \$2, which includes membership of the association and pays for ploughing. It is proposed to turn 50 acres of city property into a large vegetable garden. Land around the city that has been subdivided for speculative purposes is also to be placed under cultivation. The entire population is lending a hand.

*Saskatoon.*—The Parks Board last year dea with th matter of vacant lot cultivation with the result that 1,259 lots were cultivated and 750 bushels potatoes and 250 bushels of mixed vegetables raised. This year the city gardener has received close upon 600 applications or vacant lots. Many of these lots were ploughed last fall in order that the congestion which marked last spring should be avoided. The various city parks are put to practical use, a fee of \$1.25 for each single 25-foot lot and \$2 for each 50-foot lot being charged, to cover the cost of ploughing, etc. A special assistant has been employed to obtain permission from owners of vacant lots for their cultivation. The Parks Board has the whole matter in hand. It is anticipated that the lots under cultivation will approximately cover 31 acres.

### ALBERTA

*Calgary.*—A big publicity campaign has been planned for the end of March and the early part of April. The Vacant Lots club is working with redoubled vigour. A complete card system has been installed for the handling of the work. The board of trade, Rotary club, city council and horticultural society, trades and labour council and Consumers' league, and pretty well all the civic and social organizations, are represented in the club. The city council gives office quarters in the City Hall, a cash grant of \$850, and supplies the assistance of teams. The seed situation will be taken care of by local seedsmen. In 1917 over 2,000 twenty-five foot city lots were cultivated and this year it is expected that number will be increased. A dollar is charged for one 25-foot city lot and 50 cents for each additional lot. On request the ploughing is done at cost. Lots are ploughed free for the families of soldiers. Lectures are given with a view to stimulating the interests of both children and adults.

*Edmonton.*—The Vacant Lots Garden club this year has been definitely amalgamated with the horticultural society, the name of the new organization being the Edmonton Horticultural and Vacant Lots

Garden Association. The vacant lot cultivation end is in the hands of a committee called the Vacant Lots Garden committee. Attractive prizes will be offered for competition. The board of trade and the Rotary club are co-operating. The city council will give office space and free telephone and a guarantee against loss to the amount of \$200.00. Upwards of 2,000 lots will be cultivated. The project is financed by a membership fee of \$1.00 per member. The provincial Government gives the Horticultural Society a grant of \$300 and citizens have donated between four and five hundred dollars in goods and cash for prizes. No special privileges are granted to returned soldiers, excepting that special classes are made for them in the prize list. Contracts for ploughing have been made and any work of the kind will be done for lot-holders at the contract price. About 25 schools will cultivate gardens. A first, second and third prize will be awarded to the three best gardens from the standpoint of crops of economic value and general appearance.

#### BRITISH COLUMBIA

*Vancouver.*—Mr. George D. Ireland, Employment and Relief Officer, writes:

"Through the initiative of my Department we had about twenty acres of vacant lots under cultivation last year, which produced a crop of about forty tons of potatoes and ten tons of mixed vegetables. We hope to increase our efforts greatly during 1918. We will supply seed at first cost, and do ploughing at a minimum charge. We intend having a course of six lectures by experts from the Experimental Farm and the University of British Columbia. There will, I expect, be at least, eight hundred citizens interested in the project in attendance." A course of free lectures to be given in the evening on garden farming is announced by the University of British Columbia. The addresses will embrace talks on soil, garden crops fertilizers, insect pests, ungous diseases, potatoes and the general principles of garden farming. The city will purchase seed potatoes and fertilizers and re-sell them at cost.

*Victoria.*—The increased production committee having charge of the vacant lot work have agreed to do the ploughing for \$1.75, discing for 75 cents, harrowing for 50 cents, for lots 60 x 100 feet. Upwards of 60 acres have already been ploughed and a ploughing match for prizes of \$15, \$10, and \$7.50 has been held on quarter-acre lots.

#### A BIRD HOUSE EXHIBITION

An exhibition of bird houses made by boys in the public schools of the city was held in Ottawa on March 4th under the auspices of the Ottawa Humane Society. Donations were received, and the bird houses were sold for the benefit of the Prisoners of War Fund. There were more than eleven hundred bird houses and feed receptacles shown. Wren houses predominated, but houses for martins, woodpeckers, and other kinds of birds were included. Prizes were awarded for the best specimens under the following classification:—

1. Houses made from natural wood covered with bark.

2. Houses made from sawn wood.
3. Martin houses.
4. The greatest number of bird houses made by any one boy.

A special prize was awarded to the school that exhibited the largest number of houses. The school winning this exhibited one hundred and seventy-five bird houses. The purpose of this competition is to inculcate in the minds of the boys a love for birds. The boys are instructed on how and where to place the houses, so as to encourage the birds to occupy them, to raise their families, and to assist in the production of crops by destruction of insect life.

#### A WAR-TIME GARDENING SHORT COURSE

THE Ottawa Horticultural Society held a short course in war-time gardening on the evenings of March 11, 12, 13 and 14. For one-half hour each evening before eight o'clock practical demonstrations were given on such subjects as sowing seeds in flats, transplanting seedlings, selecting and cutting potatoes for seed and methods of applying spraying material. The instruction staff consisted of Mr. James Murray, Professor of Cereal Husbandry, Macdonald College; Mr. T. G. Bunting, Professor of Horticulture,

Macdonald College; Mr. A. Walker, Gardener, Macdonald College; Mr. W. T. Macoun, Dominion Horticulturist; Mr. F. E. Buck of the Division of Horticulture of the Experimental Farms, and officers of the local horticultural society.

The Ontario Department of Agriculture gave a motion picture demonstration of vegetable gardening activities. Lantern slides were used in connection with several other addresses. The attendance varied from two hundred to four hundred people.

## ASSOCIATIONS AND SOCIETIES

## CANADIAN COUNCIL OF AGRICULTURE

The Canadian Council of Agriculture met in annual conference in Regina, Sask., on March 11 and 12, when resolutions were passed asking that the price for this year's wheat crop be set and a minimum price set for the crop of 1919, and favouring the removal of the duty on farm machinery and implements. H. W. Wood, President of the United Farmers of Alberta, was re-

elected president and Roderick MacKenzie of Winnipeg, vice-president and secretary *pro tem*. Messrs. P. Wright, of the Manitoba Grain Growers, Geo. H. Chipman, editor of *The Grain Growers' Guide*, and J. A. Maharg, M.P., president of the Saskatchewan Grain Growers' Association, form the executive.

## THE PROPOSED INTERNATIONAL LIVE STOCK SHOW

The representatives of the various Record and Live Stock Associations appointed at their annual meetings to confer with regard to the holding of an International Live Stock Show in Canada, held a meeting in Toronto on February 22nd. The meeting was called by Mr. Wm. Smith, M.P., Columbus, Ontario, President of the Eastern Canada Live Stock Union. Mr. W. A. Dryden, president of the Dominion Short-horn Association, Brooklin, Ont., presided. The following resolution was passed: "That it is advisable to take steps to organize an International Live Stock and Dairy Show."

Three representatives each for heavy horses, light horses, beef cattle, dairy cattle, sheep, swine, poultry, dairy products, grain and seeds were appointed under the chairmanship of Mr. W. A. Dryden and the vice-chairmanship of Mr. W. W. Ballantyne, Stratford, as follows:—

<i>Heavy Horses</i> .....	Wm. Smith, M.P., Columbus. Peter Christie, Manchester. E. C. H. Tisdale, Beaverton.
<i>Light Horses</i> .....	Geo. Pepper, Toronto. James Cowan, Cannington. H. M. Robinson, Toronto.
<i>Beef Cattle</i> .....	H. M. Pettit, Freeman. Jas. Bowman, Guelph. L. O. Clifford, Oshawa.
<i>Dairy Cattle</i> .....	D. C. Platt, Hamilton. John McKee, Norwich. B. A. Bull, Brampton.
<i>Sheep</i> .....	Jas. Douglas, Caledonia. J. M. Gardhouse, Weston. Lt.-Col. R. McEwen, London.
<i>Swine</i> .....	J. D. Brien, Ridgetown. J. E. Brethour, Burford. H. A. Dolson, Norval.
<i>Poultry</i> .....	John Saunders, London. W. W. Simpson, Guelph. J. G. Henderson, Hamilton.
<i>Seeds</i> .....	A. McKenney, Amherstburg. W. J. W. Lennox, Toronto. W. J. Squirrel, Guelph.
<i>Dairy Produce</i> .....	G. A. Putnam, Toronto. G. G. Publow, Kingston. Frank Hearn, London.

Professor G. E. Day, Guelph, was appointed secretary, and John Gardhouse, Weston, assistant secretary.

## WESTERN LIVE STOCK SHIPPERS' ASSOCIATION

The Western Live Stock Shippers' Association held its annual meeting on February 21st, in Winnipeg, when the following resolution was passed "Whereas in view of the widespread efforts being made at the present time in the way of conservation, and realizing, as we do, the seriousness of the situation and the difficulties the food controllers have to contend with unless assured of the whole-hearted support of the nation in this time of stress, when the resources of the whole civilized world are being tested to the utmost, be it resolved that we, the members of the

Western Live Stock Shippers' Association, do hereby pledge ourselves to encourage in every way possible the efforts being made to conserve grain and stock of all descriptions, especially in regard to the grain being fed to hogs in the stock yards; this conservation being in the best interest of the industry and not in any way detrimental to the greater production campaign being carried on at the present time." The officers elected were: President, Geo. Hamilton, re-elected; vice-president, T. Truscott; secretary-treasurer, A. Miller, Winnipeg.

## UNITED FARMERS OF NEW BRUNSWICK

A meeting was held at Jacksonville, N.B., on March 9 and the United Farmers of New Brunswick organized with G. M.

Hagerman, president, B. J. Hartt, vice-president, and Frank Everett, Jacksonville, secretary.



## NOVA SCOTIA FRUIT GROWERS' ASSOCIATION

Among the resolutions passed at the annual meeting of the Nova Scotia Fruit Growers' Association, held at Port Williams N.S., was one expressing appreciation of the Dominion Government's effort to meet the views of the fruit growers of Annapolis Valley and the province generally. The resolution especially referred to the financial aid for carrying on experimental and instructional work derived from funds granted under THE AGRICULTURAL INSTRU-

CTION ACT. Another resolution advocated the adoption of a standard barrel for the whole Dominion. A third favoured the grading of potatoes, and a fourth asked for the appointment of a District Representative for Hants County to further instructional and demonstration work. The officers elected were: President, W. S. Blair, Kentville, N.S.; vice-president, F. H. Johnson, Bridgetown, N.S.; secretary, Manning Ells, Port Williams, N.S.

## GENERAL STOCK BREEDERS' ASSOCIATION OF QUEBEC

The annual meeting of the Quebec General Breeders' Association, which is a federation of the four principal breeders' association of the province, was held on the 13th of February in Montreal under the presidency of Hon. M. Garneau, M.L.C., Dr. J. A. Couture acting as secretary. About 150 members from all parts of the province were present. Hon. M. J. E. Caron, Minister of Agriculture for Quebec, attended, and the Federal Department of Agriculture was represented by Mr. J. H. Grisdale, Director of Experimental Farms, and Mr. H. S. Arkell, Live Stock Commissioner.

There are now 939 members in the Association, which is 139 more than last year. This number is divided as follows among the four associations affiliated with the general association:—

	Members
French Canadian Horse Breeders' Association.	161
French Canadian Cattle Breeders' Association.	171
Sheep Breeders' Association.	294
Pig Breeders' Association.	313

The receipts for the year ending December 31st, were as follows:—

For the French Canadian Horse Breeders' Association.	\$461.70
For the French Canadian Cattle Breeders' Association.	922.12
For the Sheep Breeders' Association.	1,173.24
For the Pig Breeders' Association.	2,129.09
Sale of breeding animals.	16,427.45
Grants from the Dominion Department of Agriculture.	500.00
Sundries.	48.32
Total.	\$21,661.92
Expenditures:—	
For the four Associations.	\$2,233.57
For the sale of animals.	16,796.74
Balance on hand.	2,631.61
Total.	\$21,661.92

The deficit resulting from the sale of breeding animals at Montreal and Quebec was \$381.19, instead of from \$2,000 to \$4,000 as for the first three or four sales. At the last annual sale the association offered 295 animals as follows: 97 head of cattle (70 Ayrshire, 20 Canadians, and 7 Holsteins), 122 sheep, and 76 pigs. The sheep included 19 Cotswolds, 47 Leicesters, 12

Lincolns, 22 Hampshires, 9 Oxfords, and 4 Cheviots. The pigs were 39 Yorkshires, 28 Chesters, 8 Tamworths, and 1 Berkshire. The expenditures caused by this sale were 35½ per cent of the purchasing price of the animals.

In addition to its annual sale, travelling sales were inaugurated this year by the association on the railroads. There was one which was held at fourteen centres on the I.C.R. between St. Charles and Rimouski. There were sold 71 sheep, including 34 males and 37 females. The total proceeds almost covered the purchasing price; the difference was \$51.00.

The province of Quebec has supplied more members to the National Associations of Hogs and Sheep Breeders than any other province, viz., 321 for the Sheep Breeders' Association, as against 311 for Ontario, and 334 for the Pig Breeders' Association, as against 326 for Ontario. The following resolutions were adopted at the meeting:—

1. Urging the provincial Government to pass a law compelling cheese and butter factories to purchase milk according to the percentage of fat instead of by the "pooling" system.

2. Urging the Dominion Government to remove custom duties on agricultural machinery, chemical fertilizers, and cattle feeds.

3. Asking the Dominion authorities to send back to the land all returned soldiers who came from the land, and who are fit for farm work, so as to help production.

4. Urging, for the third time, the provincial Government to pass as soon as possible a law regulating the use of stallions.

The following officers were elected for the year: President, Hon N. Garneau, Quebec; 1st vice-president, Arsene Denis, St. Norbert (Berthier); 2nd vice-president, James Bryson, Brysonville; secretary, Dr. J. A. Couture, Quebec; directors, Messrs. Louis Thoin, Repentigny, representative of the French Canadian Horse Breeders' Association; Napoleon Lachapelle, St. Paul l'Ermite, representative of the Sheep Breeders' Association; Louis Lavallée



St. Guillaume, representative of the Pig Breeders' Association.

The officers elected at the annual meeting on February 12 of the French Canadian Horse Breeders' Association and French Canadian Cattle Breeders' Association were given in THE AGRICULTURAL GAZETTE for March. Those for the French Canadian Sheep Breeders' Association are as follows:

President, Nap. Lachapelle, St. Paul l'Ermite; vice-presidents, James Bryson and H. Morin; secretary, Dr. J. A. Couture. For the French Canadian Pig Breeders' Association the officers are: President, Louis Lavallée, St. Guillaume; vice-presidents, Clovis Ouimet and Frank Byrne; secretary, Dr. J. A. Couture.

#### MAPLE SUGAR AND SYRUP CO-OPERATIVE ASSOCIATION

At the annual meeting of the Pure Maple Sugar Syrup Co-operative Agricultural Association held at Waterloo, Que., on the 19th of February, with an attendance of five hundred or six hundred farmers, a resolution was passed drawing attention to the fact that, despite the law, thousands of gallons of syrup and thousands of pounds of sugar imitations were still being sold. Another resolution was passed requesting the federal Department of Agriculture to arrange for regulations encouraging the production of maple syrup. The secretary of the Quebec Exhibition announced that a special exhibition of maple syrup products would be held in the Quebec

exhibition building from June 25th to 28th, and that \$1,000 in prizes would be distributed. The board of directors of the previous year was elected, viz.: President Gustave Boyer, M.P., Rigaud; vice-president, Chas. A. Fisk, Abbotsford, Que.; secretary-treasurer, Jos. H. Lefebvre, Waterloo, Que., with R. T. Brownlee, Hemmingford, Que.; J. H. Grimm, Montreal; J. E. Fortier, Beauceville, Que., as the other members. Mr. Michel Belanger, District Representative, of Lake St. John, gave a lecture on tapping trees, collecting the sap, evaporation, sugar making, packing, and selling.

#### BEAUHARNOIS DAIRYMEN'S ASSOCIATION

The annual meeting of the Association of Breeders' of Dairy Cattle of the District of Beauharnois was held at Huntingdon on February 22nd. The meeting was addressed by members of the staff of Mac-

donald College and others. The following officers were elected: President, D. H. Brown; vice-president, R. R. Ness, Howick; secretary-treasurer, W. F. Stephen, Huntingdon.

#### ONTARIO FRUIT GROWERS' ASSOCIATION

The 58th annual convention of the Ontario Fruit Growers' Association was held in Toronto, February 14 and 15. Resolutions were passed to the effect that the fruit growers support the campaign for increased production and conservation of food; that thanks be tendered to the Dominion Minister of Agriculture for the appointment of a traffic expert in connection with the Dominion Fruit Branch; that the Federal Government be requested to inquire as to the possibility of the conserva-

tion of fruit products by assisting the evaporating industry or the jam and canning industry; that the Government be requested to remove the duty on spraying machines, and that the Department of Education be requested to extend the time for high school pupils to work on the land to October 1st. The officers elected were: President, R. W. Grierson, Oshawa; vice-president, J. R. Hastings, Winona; secretary-treasurer, P. W. Hodgetts, Toronto.

#### ONTARIO VEGETABLE GROWERS' ASSOCIATION

The Ontario Vegetable Growers' Association, at its thirteenth annual meeting, passed a resolution urging the increased consumption of vegetables and a second resolution requesting that fertilizers be admitted free of duty. The officers elected

were: President J. J. Davis, London; first vice-president, E. K. Purdy, Cataraqui; second vice-president, Maurice May, Tecumseh; secretary-treasurer, J. Lockie Wilson, Toronto.

## ONTARIO ASSOCIATION OF FAIRS AND EXHIBITIONS

The 18th annual convention of the Ontario Association of Fairs and Exhibitions was held in Toronto, February 12 and 13. The President, Mr. S. W. Scarf, in his opening remarks, advocated the holding of school fairs in conjunction with the society fairs. Superintendent J. Lockie Wilson, in his report, pointed out that the grant from the Provincial Government for standing field crop competitions had been increased in ten years from \$1,000 to \$25,000. The larger exhibitions had paid \$29,750 to members of the Association as prizes in grains, sheaves, and roots in the standing field crop competitions, and the agricultural societies had expended \$65,000 in prizes during the last decade. The Federal and Provincial Governments during the same period had contri-

buted \$1 0,000 toward the prize money in the standing field crop competitions. The report announced that in order to stimulate production, the Provincial Minister of Agriculture had promised that the prizes offered for spring wheat in the standing field crop competition would be increased by 50%, making the grant from the Government to each society \$75, instead of \$50. This, with the \$25 contributed by each society, would make the prizes offered for spring wheat competitions \$100 in every case. The officers elected were: President W. S. Scarf, Durham; first vice-president, L. J. C. Bull, Brampton; second vice-president, W. J. Connelly, Cobden; secretary and editor, J. Lockie Wilson, Toronto; treasurer, J. Peart, Hamilton.

## ONTARIO WINTER FAIR

At the annual meeting of the directors of the Ontario Provincial Winter Fair held in the Parliament Buildings, Toronto, February 22, it was reported that the prize money last year totalled \$21,000, that the year's business amounted to close upon \$43,000, and that a credit balance remained of over \$400. This year's fair will be held at Guelph from December 6 to 12, entries closing November 20. The officers

elected were: Hon. President, W. W. Ballantyne, Stratford; president, J. I. Flatt, Hamilton; vice-president, John Gardhouse, Weston; secretary-treasurer, R. W. Wade, Toronto; executive: John A. Boag, Queensville; Peter Christie, Manchester; R. S. Stevenson, Ancaster; W. Whitelaw, Guelph; J. D. Brien, Ridgetown; Wm. McNeil, London; A. McKenney, Amherstburg.

## MANITOBA WINTER FAIR BOARD

The officers elected at the close of the Manitoba winter fair, held at Brandon, March 4 to 8, were:—President, J. D. McGregor; vice-president, Wm. McKirdy, Napinka; secretary, W. I. Smale; executive committee: the three officers, and Thos.

Jasper, Harding, John Graham, M.P.P., Carberry; John Scharff, Hartney; J. R. Hume, Souris; A. C. McPhail, Brandon; N. W. Kerr, Brandon; Prof. E. W. Wood, Agricultural College.

## MANITOBA HORTICULTURAL AND FORESTRY ASSOCIATION

The following officers were elected by the Manitoba Horticultural and Forestry Association at their annual meeting: President, George Batho, Winnipeg; first vice-president, H. W. Watson, Winnipeg; second vice-president, W. J. Roughen, Valley River; secretary-treasurer, Professor F. W. Broderick, Manitoba Agricultural College, Winnipeg. A conference with representatives of the Manitoba branch of the Canadian Seed Growers' Association led to the appointment of an advisory board of eleven to deal with potato problems, as follows: W. T. Macoun, Dominion Horticulturist, Ottawa; John De Graff, Kildonan; W. H. Whellhams,

East Kildonan; H. Stephens, Portage la Prairie; Professors V. W. Jackson, F. W. Broderick, and T. J. Harrison, Manitoba Agricultural College; W. C. McKillican, Experimental Farm Brandon; W. J. Harrison, Rural Route No. 4; Edward James, Rosser; and John Croone, Stonewall. Professor Harrison was made chairman. A committee was appointed to consider the name of a flower to be adopted as a national emblem. A resolution was adopted requesting the revision of the Manitoba Horticultural Societies' Act along the lines of the Ontario Horticultural Societies' Act.

## MANITOBA AGRICULTURAL SOCIETIES

At the recent convention of the Manitoba Agricultural Societies held in Winnipeg the week ending February 23, resolutions were passed suggesting that all cured pork suitable for shipment overseas be withdrawn from the retail market and that suitable storage places be provided; endorsing the policy in respect to hog production by farmers and hog-feeding in villages, towns, and cities; favouring the mobilizing of labour for increased production; ap-

proving the placing of high school boys with suitable farmers for the summer; urging the standardization of farm implements, or, at least, the standardization of the parts most liable to break or need replacing; advocating the placing of a larger bounty on the destruction of adult wolves. The officers elected were: President, A. D. McConnell, Hamiota; vice-president, S. Larcombe, Birtle; secretary, H. W. Dayton, Virden.

## MANITOBA HOME ECONOMICS CONVENTION

The Home Economics Convention held in Winnipeg the week ending February 23, passed resolutions asking the provincial Government to readjust the province into consolidated school districts of more reasonable or equal size, making the number of children of resident ratepayers the determining factor on the size of the district; pledging the convention to do all it can in the conservation of food by the use of substitutes; deciding to affiliate with the National Council of Women, and to bring the matter of federation under one

name to the notice of all other provincial organizations, and urging the extension service to do all it can to prevent boys and girls from entering work which is not their own at the boys' and girls' club fairs, and suggesting that parents and friends of the children make a special effort to prevent such conduct. The directors elected were: Mrs. H. W. Dayton, Virden; Mrs. D. Watt, Birtle; Mrs. M. E. McBeath, Headingly; Mrs. J. B. McIntyre, Dauphin; Mrs. K. Gair, Portage la Prairie; Mrs. G. T. Armstrong, Manitou.

## MANITOBA BEE-KEEPERS' ASSOCIATION

The ninth annual convention of the Manitoba Bee-keepers' Association was held in Winnipeg, February 19 and 20, when G. G. Gunn, Lockport, Man., was re-elected president, B. Brewster, Green Ridge, vice-president, and R. M. Muckle, secretary-treasurer. A resolution was adopted to the effect that all diseased colonies should be destroyed and owners allowed three-quarters of the values. The

president urged that on patriotic grounds it was the duty of every bee-keeper to exert himself to the utmost in the production of honey. It was decided to hold summer field meets at Teulon, Manitoba, Souris, Dominion City, Rapid City and Swan River and a provincial meet at the home of the Rev. R. A. Rutledge, St. Charles, Man.

## MANITOBA BRANCH OF THE CANADIAN SEED GROWERS' ASSOCIATION

The officers of the Manitoba Branch of the Canadian Seed Growers' Association, elected at the annual meeting in Winnipeg, February 22, were: President, Donald

McVicar, Portage la Prairie; vice-president, W. C. McKillican, Brandon; secretary, W. T. G. Wiener, Manitoba Agricultural College.

## MANITOBA VETERINARY ASSOCIATION

The annual meeting of the Manitoba Veterinary Association was held in Winnipeg, February 20, when the following officers were elected: President Dr. W. J. Hinman, Winnipeg; vice-president, Dr. J. Swanson, Manitou; secretary-treasurer, Dr. C. D. McGilvray, Winnipeg. Dr. C. Higgins and Dr. S. Hadwen, of the Health

of Animals Branch, Ottawa, delivered addresses, the former on black-leg, anthrax and other contagious diseases to which animals are subject and the latter on swamp fever of horses, describing the results of investigations into this disease in Western Canada during 1917.



## MANITOBA POULTRY ASSOCIATION

At the annual meeting of the Manitoba Winter Fair and Stock Show at Brandon, the Manitoba Poultry Association was re-organized with the following officers; President, M. W. Kerr, Brandon; vice-

presidents, W. H. Brett, Winnipeg; W. J. Saunders, Killarney; W. Parrott, Neepawa; J. H. Bartlett, Souris; secretary, W. F. McGinnis, Brandon; treasurer, Jas. McLean, Brandon.

## SASKATCHEWAN GRAIN GROWERS' ASSOCIATION

The annual meeting of the Saskatchewan Grain Growers' Association held at Regina, February 12, 13 and 14, was the most numerously attended gathering of the Association yet held, eighteen hundred men and three hundred women registering. The annual reports showed that whereas the total business in 1916 was \$1,058,000, in 1917 it was \$1,643,000, being an increase of \$585,000, or nearly 60 per cent. The officers elected were: President, J. A. Maharg, M.P., Moose Jaw; vice-president, A. G. Hawkes, Percival; secretary and director at large, J. B. Musselman, Regina. Other directors are: Thos. Sales, Langham; Mrs. McNaughton, Piche; H. C. Fleming, Tait; and John Evans, Nutana.

The resolutions passed included the following: Pledging the Canadian and Allied governments every support to make democracy safe; favouring the complete mobilization of the man power of the Dominion; voting \$1,000 to the Allies Agricultural Relief Fund; favouring a survey of the boys of high school age in the province with a view to enable them to render all the help they can in seeding and harvesting the 1918 crop; approving removal of the duty on tractors; asking for further extension of the free list in order to include all farm implements and machinery, and requesting that a price be set on the same; pledging the convention to increase hog production, but at the same time suggesting that prices should be fixed on all coarse grains and hogs; requesting the Government to remove the duty on fuel and lubricating oils, and also to purchase seed and feed for the relief of settlers in South-Western Saskatchewan, whose farms suffered from drought last

year; prohibiting the election to office of men interested in business in competition with the grain growers' association; requiring that candidates for office should declare themselves on the association's policy before their names are submitted to the vote; requesting that a minimum price for wheat be set for the period of the war, and for a year thereafter; instructing the executive to invite all members of the Dominion Parliament to make a tour of Saskatchewan in a body during the coming summer; calling for closer co-operation between the Saskatchewan Grain Growers' Association and the Saskatchewan Co-operative Elevator Company; recommending that the executive arrange for a training course for the sub-organizers and voluntary workers of the association along lines indicated in the recommendation of the special study committee; urging the further opening up of territory in Northern Saskatchewan; urging the Provincial Government to do everything it can towards increasing the usefulness of the telephone in rural municipalities; asking that a commission of experts be appointed to work out problems of the standardization of farm machinery; recommending the executive to appoint competent organizers under the trading department of the association to extend the operations of the locals by giving expert advice to those associations newly established, and by organizing new ones; favouring the nationalization of railways, also the operating of all coal mines by the Government; requesting the establishment of a maximum moisture content of not less than 13.50% before grading wheat tough, and not less than 16.50% before grading wheat damp

## SASKATCHEWAN WOMEN'S GRAIN GROWERS' ASSOCIATION

At the annual convention of the women's section of the Saskatchewan Grain Growers' Association held at Regina, February 12, 13 and 14, resolutions were passed, among others, favouring the registration of all women between the ages of 18 and 50 for national service; favouring a Dominion Board of Health; asking the Provincial Department of Education to assist in affording agricultural education for children of poor parents; asking that the medical inspection of rural schools be made compulsory; favouring a direct taxation on land for the purpose of raising Red Cross funds;

urging that equal pensions be paid to the wives of privates as to those of officers; asking the Department of Education to release girls for farm work in the same manner as is being done with boys, and favouring the establishment of community laundries. The officers elected were: President, Mrs. S. V. Haight, Keeler; vice-president, Mrs. C. E. Flatt, Tantallon; directors at large, Miss Irma Stocking, Delisle, and Mrs. Francis Shepherd Stalwart; secretary, Mrs. John McNaughton, Piche.



## SASKATCHEWAN HOME MAKERS' CLUB

The annual convention of the Saskatchewan Home Makers' Clubs will be held at Saskatoon on June 24, 25, and 26.

## SASKATCHEWAN JUNIOR AGRICULTURAL SERVICE LEAGUE

Members of the Junior Agricultural Service League of Saskatchewan, which was instituted last year, before May 1 were responsible for the destruction of 514,140 gophers, and it was reckoned that about \$225,000 worth of grain was thus saved. This year the objective is to destroy one million gophers, which should save close to half a million dollars' worth of grain.

Under the direction of the Weeds and Seed Branch, which was responsible for the creation of the League, a small monthly

publication is to be issued, in order to keep alive the interest and to instill into the minds of the children the necessity of avoiding the waste caused both by weeds and gophers.

Many letters have been received from boys and girls in connection with this matter, and also from school teachers. Several who killed more than one thousand gophers last year announce their intention of doubling their record this season.

## SASKATCHEWAN CATTLE BREEDERS' SALE

The annual cattle sale, under the auspices of the Saskatchewan Cattle Breeders' Association, was held in Regina on Wednesday and Thursday, March 13 and 14.

Over 260 bulls and 65 females were sold. The average price paid for 200 Shorthorn bulls was \$183, for 22 Aberdeen Angus \$274, and for 39 Herefords \$268. Thirty yearling Hereford heifers brought an average of \$210, while 34 Shorthorn females averaged \$195. Some excellent animals were brought out and in all cases where good breeding and fitting were in evidence good prices were obtained. The sale was a success, considering the very

large number of animals offered, and the effect on the general live stock interests of Saskatchewan will be much greater than if inflated prices had prevailed.

A noteworthy feature of the sale was that a large number of the yearling bulls were purchased by men just starting up in the cattle business. This means that a larger number of pure-bred sires have been distributed and over a wider area than would have been the case if higher prices had prevailed. This fact will react favourably upon the breeder, for the more widely the pure-bred sire is distributed the greater will be the demand.

## SASKATCHEWAN SHORTHORN CLUB

The Saskatchewan Shorthorn Club was organized at Regina on March 14th with the election of the following officers: Honorary president, Dean Rutherford,

Saskatoon; president, R. W. Caswell, Saskatoon; vice-president, C. B. Latta, Govan; secretary-treasurer, H. Follet, Duval.

## SASKATCHEWAN CLYDESDALE CLUB

The Saskatchewan Clydesdale Club was organized at Regina on March 14, the following officers being elected: Hon. president, Mrs. W. H. Bryce, Arcola;

president, R. A. Taber, Condie; vice-president, G. Stutt, Regina; secretary-treasurer, J. Dougall, Condie.

## ALBERTA DAIRYMEN'S ASSOCIATION

At the annual meeting of the Alberta Dairymen's Association, held at Edmonton, on Feb. 23, resolutions were passed urging that the sale of oleomargarine be discontinued after the war, asking the pro-

vincial and federal authorities to prevent the renovating of dairy butter; asking the provincial Department of Agriculture to establish a system of grades and grading of cream, or milk, conforming as nearly as

possible to the system now used in regard to butter, and that the grade standards and samples be left to the discretion of the Dairy Commissioner; urging that it be made compulsory to maintain uniform prices to all points for the same grades of cream, or milk, except that the creamery or cheese factory operators be allowed to meet their competitors at individual points; advocating that only persons or firms actually

engaged in manufacturing butter or ice cream, and sweet cream vendors, or their employees, be allowed to purchase cream; suggesting that the license necessary to operate a buying station be granted only to persons who have proven their qualifications to the satisfaction of the provincial Dairy Commissioner or his staff, and endorsing the movement to form a Dominion Dairymen's Association.

#### ALBERTA PROVINCIAL HORSE BREEDERS' ASSOCIATION

The Stallion Enrolment Act formed the chief topic of discussion at the annual meeting of the Alberta Provincial Horse Breeders' Association, amendments being asked for to permit the Commission to refuse a certificate to a stallion in case it was thought, either on account of type or

unsoundness, the animal was not entitled to the same, and to grant the Commission power of discretion to grade grade stallions according to type. The officers elected were: President, Geo. S. Cresswell, Edmonton; vice-president, J. G. Clark, Clark Manor; secretary, W. J. Stark, Edmonton.

#### THE ALBERTA PROVINCIAL SWINE BREEDERS' ASSOCIATION

The annual meeting of the Alberta Provincial Swine Breeders' Association was held at Edmonton, March 7th, when the following officers were elected: Hon. President, W. F. Stephens, Provincial Live Stock Commissioner; president, S. C. Swift, Viking; vice-president, Geo. R. Ball, West Salisbury; secretary, W. J. Stark, Edmonton. Mr. Geo. H. Hutton, Superintendent of the Dominion Experimental Station at Lacombe spoke of his experience with growing hogs

at the Station, making special reference to the system of pastures and self feeders on the cafeteria plan, which allows hogs to select at their own will the rations that instinct encourages them to eat. Mr. Hutton said that if economy in feeding, and attending to hogs were followed, hog-raisers would not only reap many dollars, but their course would mean millions of dollars to the province.

#### ALBERTA PROVINCIAL SHEEP BREEDERS' ASSOCIATION

At the annual meeting of the Alberta Provincial Sheep Breeders' Association, held at Edmonton on March 7th, Mr. Jas. McCaig, Editor of Provincial Publications, said that sheepmen of to-day have the most progressive organization in Canada, with a Dominion-wide business organization for the co-operative marketing of wool.

It was stated that the Association now has 172 members. The officers elected were Hon. President, W. F. Stephens, Provincial Live Stock Commissioner; president, A. B. Campbell, Edmonton; vice-president, Geo. R. Ball, West Salisbury; secretary, W. J. Stark, Edmonton.

#### UNITED FARMERS OF ALBERTA

At the 10th annual convention of the United Farmers' Association of Alberta held in Calgary on January 22nd, the following officers were elected: President, H. W. Wood, Carstairs; first vice-president, P. Baker, Ponoka; second vice-president, W. D. Trego, Gleichen; third vice-president, J. W. Leady, White Court; fourth vice-president, Rice Sheppard, Edmonton; secretary, P. P. Woodbridge, Calgary. Resolutions were passed, among others, urging the rigid enforcement of all possible means for the prevention of destructive forest fires and for the encouragement of tree planting; deciding that before election

to office in the Association, candidates should be required to state the exact source of their principal incomes and source of livelihood; asking the Provincial Government to encourage the use of vaccine for the prevention of black-leg in cattle; asking the Provincial Government to extend the county agent system as fast as qualified men could be secured; favouring the incorporation of the Association; giving the directors authority to apply for legislation conferring upon the association power to act as executives and administrators of estates and generally as trustees on behalf of members when required; suggesting the

establishment of labour bureaux at Calgary, Edmonton, and Lethbridge, with a view of supplying the farmers with farm labour and also of regulating wages; instructing the markets committee of the Association to endeavour to secure a system of grading and classifying live stock in the

same manner as grain; deciding that any member of a local association may become a life member on payment of a fee of \$15, until the first of January, 1919, when the fee shall become \$25, all life members' fees to be held as a reserve fund.

### ALBERTA AGRICULTURAL FAIRS ASSOCIATION

Announcement was made at the annual convention of the Alberta Agricultural Fairs Association held at Edmonton, on Feb. 21, that inspections under the Stallion Inspection Act would in the future be held at the fall fairs, instead of in the spring as formerly. A committee was appointed to draft a model programme, paying especial attention to the women's and children's

departments. The officers elected were: Hon. president, Hon. Duncan Marshall, Edmonton; Hon. vice-president, H. A. Craig, Deputy Minister of Agriculture, Edmonton; president, E. L. Richardson, Calgary; vice-president, J. F. Day, Red Deer; secretary-treasurer, E. B. Fream, Calgary.

### THE BRITISH COLUMBIA DAIRYMEN'S ASSOCIATION

The thirteenth annual convention of the British Columbia Dairymen's Association was held at Chilliwack on February 6th and 7th. Upwards of two hundred dairy farmers were in attendance. The programme was made up of addresses and discussions of timely and vital interest to the dairy industry. The following resolutions were passed:—

That the B.C. Dairymen's Association favours some effective movement among its members for the production of farm seeds, and that some co-operative method of handling and distributing the same be worked out by the Association.

That the B.C. Dairymen's Association instruct its executive committee to promote an effective scheme to save worthy heifer calves from slaughter, and to make them available to those districts in greatest need of them.

That this Association petition the Government of British Columbia to at once establish compulsory dairy cattle insurance that will provide adequate indemnity for animals slaughtered, and be maintained by equitable assessments from the provincial Government as representing the public and from the owners of the cattle.

That the executive of this Association appoint a committee to proceed to Victoria and negotiate with the Government for the passing of the necessary legislation at this session, that will secure the insurance on equitable lines.

That the dairymen and agriculturists of this province, through the members of the B.C. Dairymen's Association, heartily approve of the holding of the larger fairs during the war, and urgently request the Government to do all in its

power to substantially assist financially and otherwise such fairs.

That this Association endorse the movement for the economic increase of pork production in the province.

That in the opinion of this Association the fixing by the Government of a minimum weight at which hogs may be slaughtered in this province would make it imperative that a minimum price be fixed.

### DAIRY COMPETITIONS

In connection with the convention there was held an exhibition of creamery butter, and prizes were offered in competitions in milk production. In the butter competition ten creameries exhibited in the class for solid boxes and nine in the class for pound prints. Quality was higher than in previous years. In the milking record competition, classes were provided for animals of each of the dairy breeds obtaining the highest records of fat above the amounts required for qualification in their particular section in the Canadian Record of Performance. In the Ayrshire class a two year-old exceeded the required product on by 194 lb. and in the mature class by 182 lb. In the Holstein class a mature cow exceeded the requirements by 380 lb., and a Guernsey of the two-year-old class by 113 lb. There were also competitions between cow-testing associations in the province and cows in individual associations.

### OFFICERS

The officers elected were: Honorary president A. C. Wells, Sardis; president, S. H. Shannon, Cloverdale; vice-president, J. W. Berry, Langley Prairie; secretary-treasurer, T. A. F. Wiancko, Department of Agriculture, Victoria, B.C.



**BRITISH COLUMBIA STOCK BREEDERS' ASSOCIATION**

At the annual meeting of the British Columbia Breeders' Association held at Victoria, February 19, Mr. A. D. Patterson was elected president for the twelfth year

in succession, and Mr. W. T. McDonald, Provincial Live Stock Commissioner, was re-elected secretary-treasurer.

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**BRITISH COLUMBIA GOAT BREEDERS' ASSOCIATION**

The first annual meeting of the British Columbia Goat Breeders' Association was held in Vancouver on January 26th. The Association, in conjunction with the Canadian Goat Society has been able to provide for goat pedigree registration under

the Canadian National Live Stock Records. The following officers were elected for 1918: President, D. Mowat, McKay; vice-president, G. H. S. Cowell, Port Alberni; secretary-treasurer, Geo. Pilmer, Victoria.

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**UNITED FARMERS OF BRITISH COLUMBIA**

The second annual convention of the United Farmers of British Columbia was held at Victoria, B.C., on February 20. The officers elected were: President, Geo. Clarke, Saanich; vice-presidents, J. L. Pridham, Kelowna; R. A. Copeland, Kelowna; and W. Patterson, Koksilah; secretary, H. J. Ruscombe, Duncan. Resolutions were passed requesting that the Provincial Agricultural Act be revised and that a draft of the Act be submitted to the United Farmers before going to the legislature; asking that legislative action be taken to exempt improvements on farm lands from taxation; asking that steps be taken to eliminate the gopher pest, and that the provincial Government be requested to offer prizes to boys and girls as an incentive to destroy the pests; requesting the provincial Government to assist the farmers in obtaining seed wheat and oats on credit; praying the provincial Government to adopt measures to prevent

oriental aliens from acquiring control of agricultural lands; requesting that customs duties be abolished on agricultural machinery and implements; asking that a minimum price be fixed for pork; asking that the Bank Act be amended so that a farmer giving a chattel mortgage would not have to pay a \$5 lawyer's fee; asking the Government to take control of evaporation plants, or else compel evaporators to set a minimum price; urging the conscription of foreign labour; asking for stumping powder from the provincial Government on the same terms as farmers' institutes; applying to the provincial Government to adopt the local legislative system; appealing to the federal Government to change the timber law so that companies holding timber lands will be compelled to throw them open for settlement after a year's notice, and that the railway companies be appealed to to supply more refrigerator cars.

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**BRITISH COLUMBIA JERSEY BREEDERS**

The British Columbia Jersey Breeders' Association was formed at Chilliwack, B.C., on February 7, when the following officers were elected: Hon. president, Professor J. A. McLean, University of

British Columbia; president, A. H. Menzies, Pender Island; vice-president, E. H. Barton, Chilliwack; secretary-treasurer, G. S. Harris, Moresby Island.



## NEW PUBLICATIONS

## THE DOMINION DEPARTMENT OF AGRICULTURE

*Report of the Agricultural Instruction Act, 1916-17.* This report is a complete statement of the funds granted under the Act to the several provinces, and the purposes to which they have been put. Concise reviews are also given in classified form of the work that is being performed, both wholly and partially, by the aid of these funds. Comparative tabular statements covering the last five years show the upward trend and progress in the encouragement of agriculture, and especially in the arena of instruction, in research, in classroom, and in out-door demonstration, that is going on.

## THE DOMINION EXPERIMENTAL FARMS

*Report of the Dominion Experimental Farms for the fiscal year ending March 31, 1917.* Instead of, as in former years, being published in volumes with full scientific details and explanations of experiments carried out at the Farms, the report this year is condensed into a book of 148 pages, in which the activities and operations of the Farms and Stations are outlined in concise descriptive and statistical form. Accounts of the experiments and tests that have been made, with the results obtained, are being published as distinctive bulletins. The Director of the Farms explains that this change is made to further economy and efficiency and that "the great amount of experimental work now being carried on, much of it of a complex character, makes it very difficult, if not impossible, to give a yearly detailed report of progress in such way that the average reader can follow it easily, and benefit therefrom." The report, however, as published, is very complete as to the work that has been accomplished at the Farms and Stations and contains a vast amount of information, in facts and figures, with comparative tables and descriptive text, regarding the year's activities.

## THE DIVISION OF HORTICULTURE

*The Potato in Canada*, its cultivation and varieties, by W. T. Macoun, Dominion Horticulturist, Bulletin No. 90. This is the third edition of the regular bulletin of the Division on potato cultivation; revised and brought up to date. Consisting of 100 pages, the bulletin, after a description and history of the potato in Canada, gives statistics regarding the world's crop and then details experiments made at the Central Experimental Farm, describes the

different varieties and how they may be originated, dilates on the importance of source and vitality of seed, the order and methods of cultivation and tillage, tells how to protect potatoes from insects and diseases and then proceeds to deal with storing, marketing, cost of growing, etc., continuing with some particulars of the boys' potato-growing contest in Carleton and Russell, with statistics of the average yields at the different experimental farms and stations, with the group classification of potatoes, with an extensive list of the varieties tested at the Central Experimental Farm, and finally, with a concise summary of conclusions.

## THE DAIRY AND COLD STORAGE BRANCH

*A New Plan for Cow Testing.* Circular No. 24 of the Dairy and Cold Storage Branch, under the foregoing heading describes the new system that has been adopted for keeping the records of dairy herds. It tells what is meant by a herd record and why dairymen should keep such records. The circular also defines how the records should be kept and contains blank forms of application from farmers for assistance in herd record work and for employment as a milk tester. The necessary equipment for testing and other information are given.

## THE ENTOMOLOGICAL BRANCH

*Rats and Mice.* Crop Protection Leaflet No. 7. This is a four-page leaflet by Dr. C. Gordon Hewitt, Dominion Entomologist and Consulting Zoologist, describing briefly the immense destructiveness of food caused by rats and mice, and then telling how their invasions can be best prevented and the pests destroyed.

## THE PROVINCIAL DEPARTMENTS OF AGRICULTURE

## QUEBEC

*Poultry Raising in Quebec in War Time*, by M. A. Jull, Manager and Lecturer Poultry Department, Macdonald College, Quebec; Bulletin No. 54. Here is a twelve page bulletin containing information in plain, straight-forward language of the greatest value to the poultry raiser, whether on a limited or extensive scale.

*Wheat Growing in Quebec in War Time.*—By Jas. Murray, Professor of Cereal Husbandry, Macdonald College. In the shape of an eight-page folder, a strong and urgent appeal is here made to the farmers of Quebec to increase their growth of wheat this year from the four million bushels

of last year to eleven million bushels. Professor Murray points out that to do this, four hundred thousand acres would have to be sown more than last year.

### ONTARIO

The committee in charge has had a bulletin prepared and published giving the results of the boys' potato growing contests in Carleton and Russell counties and the girls' gardening and canning competitions in Carleton county during 1917. Portraits of the winners and complete statistics regarding their work are furnished and a report given of the meeting held in the City Hall in Ottawa when the prizes were presented. The prizes were contributed and the bulletin, which comprises 32 pages, published through the generosity of Mr. R. B. Whyte, a public-spirited citizen of Ottawa.

*A Farmer's Poultry House.*—The District Representative of Lennox and Addington County has issued a large four-page leaflet giving instructions and advice, with diagrams and dimensions and quantity of material required to build a farmer's poultry house.

*Co-operative Wool Sales.*—An appendix to the annual report of the Live Stock Branch, taking 96 pages, recently published, gives a complete list of all the lots sold with the prices attached in every case. A deal of information is also given regarding the care of sheep, and shipping and packing of wool. Specific details are supplied of the requirements by judges of the different breeds.

The Fruit Branch circular of the Department of Agriculture for February contains a list of the varieties of apples, cherries, peaches, pears, plums and other fruits suitable for planting in Ontario. The list contains a number of varieties recommended by Mr. W. T. Macoun, Dominion Horticulturist, for northern sections.

### MANITOBA

*Agricultural Extension in Manitoba in 1917.* Under this heading a twenty-four page report is given, with tabulated statements, of the activities engaged in and the work performed by the agricultural societies and home economics societies of Manitoba during 1917. The statement was prepared for presentation at the annual convention of the societies held in February this year.

*The Boys' and Girls' Clubs Handbook* is a book of 82 pages, not only giving the rules for contests in pig-raising, calf-raising, chicken-raising, corn-growing,

garden-making, and seven other things, but also describing how the work that is entailed in each particular instance should be carried on. Information is also given on the organization of clubs and the assistance that may be expected from the Extension Service.

### ALBERTA

*The Directory of Poultry Breeders*, published by the Alberta Provincial Poultry Association, with which is affiliated the poultry associations of Calgary, Edmonton, Lethbridge, Medicine Hat, Ogden and Stettler, contains the names of all the known breeders of pure-bred poultry in the province, the constitution and by-laws of the association and a complete record of the poultry prize winners at both the Edmonton and Calgary winter fairs.

### BRITISH COLUMBIA

*The Seed Growers' Directory 1917-18*, Circular Bulletin No. 20, of the Live Stock Branch (Soil and Crop Division) of the Provincial Department of Agriculture, contains thirty pages of matter respecting the cultivation and growth of every kind of common vegetable, and also some facts regarding bulbs and flower seed production, by L. E. Stevenson, Dominion Experimental Station, Sidney, B.C. Professor Paul A. Boving contributes an article on the danger of experiments in the crossing of roots.

### MISCELLANEOUS

The Report for the year 1917 of the Jewish Agricultural and Industrial Society shows that among other things 389 farm loans were granted during the year, and at the close of the year almost one million dollars, contained in 1,761 accounts, were outstanding. A total of 1,529 farm labourers had been placed. The Society co-operates with the New York State College of Agriculture in educational work amongst Jewish farmers. Short course scholarships are awarded to the children of Jewish farmers and other public-spirited work carried on. The Association publishes *The Jewish Farmer* in New York City.

*The Nitrogen Compounds in Rain and Snow*, by Frank T. Shutt, M.A., D.Sc., Dominion Chemist, and R. L. Dorrance, B.A., is the subject of a twelve-page reprint from the Transactions of the Royal Society of Canada. The paper, which was read at the Society's May meeting, gives an account, with minute statistical details, of investigational work carried on for the ten years extending from 1908 to 1917.

## NOTES

Special efforts are to be made this year to increase the growth of strawberries in New Brunswick. A number of prizes are to be offered for quantity and quality of production.

In the district of Kenora, Ontario, \$1,100 has been raised in public subscription to finance the bringing in of a carload of brood sows to be distributed to the farmers and others.

The Wainfleet and Humberstone Township Farmers' club in Welland county, Ontario, by purchasing fence posts co-operatively were able to save between fifty and sixty dollars per car.

During the holding of the short course in Brant County, Ontario, the District Representative took the class to Toronto, where a day was spent visiting the stock yards, packing houses, city dairy and the Parliament Buildings.

The Public Library of Toronto has for six years held an annual exhibition of garden literature to which hundreds of people go to consult the pamphlets, catalogues, leaflets and books that can be of service to them in the work of gardening.

Mr. J. S. Knapp, District Representative, Waterloo county, Ontario, reports that a farmer in his district raised 3,150 pounds of mangel seed last year from two and one-half acres, which he is selling at from sixty to seventy-five cents per pound.

Through the efforts of public school teachers and pupils in the province of Saskatchewan a sum approaching one hundred thousand dollars has been raised within the space of eighteen months for patriotic purposes. These include contributions to the Red Cross, Belgian Relief and the Canadian Patriotic Funds.

At a meeting of the Home and School Council in Toronto, Principal Colvin told of the garden work done by the Kitchener school. He said that 100 parents and 300 children cultivated three acres with the greatest success. A committee was appointed by the council to arrange for the systematizing and supervising of school gardens.

Mr. I. F. Metcalfe, District Representative, Manitoulin Island, reports that last year the Manitoulin Island Co-operative Association did a business of \$38,402, while South Manitoulin Association, handling wool and lambs, did business amounting to \$19,480.

With a view to encouraging the acreage of wheat to be grown in Ontario this year the Department of Agriculture is making a direct appeal to 100,000 farmers to raise 5 acres of spring wheat. A pamphlet describing the best methods of spring wheat growing in Ontario is being distributed.

The Collingwood Board of Trade last year carried on for the first time a series of garden work competitions between boys and girls. This year the competitions are to be extended to the beautifying of the home through the care of the lawns and growing of flowers and anything that will make the home more attractive.

In 1917 the agricultural societies of the province of Saskatchewan held 13 spring stallion shows, 50 ploughing matches, 2 good farming competitions, 133 exhibitions, 23 standing crop competitions, 52 seed fairs, 17 poultry shows and 60 short courses.

Among the vegetables produced in Prince Edward Island in back-yard and vacant-lot farming, were 75,000 bushels potatoes, according to the Provincial Department of Agriculture. It is expected that this year's produce will be very materially in excess of last year. Word has already been received by the Department of special garden lots being laid out.

An interesting fact with regard to the work among boys and girls has just come to the notice of the Director of Agricultural Extension in Saskatchewan. Mr. F. N. Spencer, a director of the Craik Agricultural Society, has for the last four years given a half bushel of registered seed wheat to the boys of "teen" age in his locality. He has also offered liberal cash prizes to the boys who showed the best results from their experiments. Three of these boys have won prizes at the Farm Boys' Camp, Regina. One of the boys is in attendance at the College of Agriculture, and two of the boys have been in attendance at the short courses which have been held at the college.



The following resolution was passed at the Fairs Association of Ontario convention: "That a committee consisting of Dr. C. A. Zavitz, Guelph; Dr. Charles E. Saunders, Ottawa; J. Lockie Wilson, Toronto; L. H. Newman, Ottawa; and Wm. S. Scarf, Durham, be appointed to investigate and determine the varieties of grains best suited to grow in the different sections of the province of Ontario."

According to G. R. Green, District Representative in Oxford County, Ontario, the poultry industry in that county is making rapid progress. At a poultry breeding station which supplies eggs for school fair districts, orders have been received for more than one hundred dozen settings from individuals in the district. These will be filled only after the requirements of the school fair districts have been met.

The Inverness County, N.S., Wool Growers' Association proposes to establish two or three stations in the county to collect wool for shipment to the grading station at Port Hood. The Association sold about two thousand dollars worth of wool last year. Arrangements are being made to add the marketing of cattle and lambs and the importation of fertilizers, seed, flour, and feeds to the activities of the Association.

It was announced by The Honourable Duncan Marshall, Minister of Agriculture for Alberta, at the annual convention of the Alberta Dairymen's Association, that the number of dairy cows in the province had increased from 179,000 in 1914 to 325,000 at the end of 1917; that the amount of butter made in the province had increased from 4,000,000 pounds in 1914 to about 8,000,000 pounds in 1917; that the amount of cheese manufactured in the province had increased from 70,000 pounds in 1914 to 745,000 pounds in 1917.

The Government of Alberta, through the provincial Live Stock Commissioner, bought at the packing plants and stock yards and kept at the exhibition grounds, Edmonton, 330 hogs. The females were all grades, but were chosen as being the most true to type. Yorkshire, Duroc-Jersey, Berkshire, and Poland China boars were secured, and the whole stock have been disposed of to farmers in the province. The pigs were in poor condition when bought, but were fed up before sale, first on a ration of oats and barley, and latterly from a car of screenings. They were also given all they wanted of coal slack mixed with salt and sulphur, with hay tea as a special tonic.

By order-in-council, the British Columbia Government has given notice that the rate of interest charged upon loans made by the Land Settlement Board under the provisions of the Land Settlement and Development Act, has been raised from  $6\frac{1}{2}$  per cent per annum to  $7\frac{1}{2}$  per cent per annum.

The Egg Circles at Cambray and Oakwood in Victoria County, Ontario, are managed entirely by women. The eggs are sold directly to the Housewives' League and the retail trade in the city of Toronto. Last year they disposed of 8,695 dozens of eggs at a price exceeding the prices paid by the local stores by  $4\frac{1}{2}$  cents a dozen. These circles also handle butter and poultry through the same channels.

The Canada Food Board during the early part of last month and the last half of February took active steps to encourage an increased production of maple sugar products. The assistance of the Provincial Departments of Agriculture has been secured. A great deal of appropriate literature has been circulated and owners of large estates have been appealed to for their co-operation. Replies promising their best efforts have been received from Nova Scotia, New Brunswick, Quebec and Ontario. The secretaries of the Farmer Clubs of every county in Quebec and the District Representatives of Ontario have all been addressed and promised support.

A feature of the short agricultural Course held by the District Representative in Middlesex county, Ontario, was the visiting of outside places. Visits were made to the asylum farm at London and the sanitarium at Byron, where excellent herds of dairy cattle and modern barns and equipment are maintained. At the latter institution a new type of open front poultry house was examined. The class also visited a green house where rhubarb growing was in progress, and they spent some time at the Tractor School for returned soldiers.

Mr. Wade Toole, B.S.A., who for years has been editor of *The Farmer's Advocate* at London, Ont., has been appointed Professor of Animal Husbandry at the Ontario Agricultural College, in succession to Professor George E. Day, who resigned to accept the secretary-treasurership of the Dominion Shorthorn Breeders' Association. Mr. Toole hails from Whitevale, Ontario county, and graduated in 1911 from the Ontario Agricultural College. He has been an earnest student of all appertaining to live stock and has been much sought after for advice.



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- Favours a National Dairy Organization, J. A. Ruddick, Dairy Commissioner, page 284.
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- The Nor'-West Farmer*, Winnipeg, March 5, 1918.
- Feeding a Thousand Hogs Experimentally, G. H. Hutton, B.S.A., Superintendent, page 273.
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# PART V

## The International Institute of Agriculture

T. K. Doherty, LL.B., Commissioner

### FOREIGN AGRICULTURAL INTELLIGENCE

All communications in regard to this section should be addressed to T. K. Doherty, International Institute Commissioner, Department of Agriculture, West Block, Ottawa.

### SCIENCE AND PRACTICE OF AGRICULTURE

#### GENERAL INFORMATION

888—Agriculture in the Dominican Republic.—ZIELINSKI, C. M. J., in *Supplement to Commerce Reports*, Annual Series, No. 26a., pp. 1-3. Washington, D.C. May 5, 1917. (2 pp. in Institute Bulletin.)

The Dominican Republic has an area of nearly 20,000 square miles, being about twice the size of the Republic of Haiti or more than five times that of Porto Rico. The latest estimate of the population is 700,000. The fertility of the land, which is mainly in the virgin state, presages the possibility of immigration and consequent development provided, of course, other factors remain equal.

One of the most important products of the Republic is sugar, produced mainly in the southern half. The 1916 crop, although about equal to that of 1915, brought excellent profits. The 1917 crop, estimated at about 150,000 long tons, is considerably more than the one preceding.

The Dominican Republic has rich forests, which are hardly diminished by the draft made during the four centuries since its discovery. The wooded area is estimated at 9,500,000 acres, about 85 per cent of the total land surface. Mahogany was formerly exported in considerable quantities and is known for its excellent quality. Pine covers a large area in the central and southwest parts. *Lignum-vitae* is plentiful, especially in the south. There are immense quantities of dyewood in the interior.

889—Agriculture in the Philippines.—*Commerce Reports*, No. 154, pp. 28-31. Washington, D.C. July 3, 1917. (2 pp. in Institute Bulletin.)

Few authoritative figures have ever been published regarding agriculture in the Philippines. This fact lends special importance to data collected by the Philippine Bureau of Agriculture and now made public by the Bureau of Insular Affairs at Washington.

The total area of the Philippines including in all 3,141 islands, islets, and reefs has been reported by the Manila Observatory to be 119,542 square miles, which is equivalent to 76,500,000 acres; but the area under cultivation in the six principal crops and three minor ones in the year ended June 30, 1916, was only 6,500,000 acres, or 8.5 per cent of the whole area of the islands. Rice was grown on 2,800,000 acres abaca on 1,235,000, corn on 1,070,000, coconuts on 680,000 (the average planting being 500 trees per acre) sugar cane on 444,000, tobacco on 145,000, and maguey on 76,000 acres. There were 2500 acres devoted to cacao and 2,000 to coffee.

891—The Relation between the Hatching of the Eggs and the Development of the Larvae of *Stegomyia fasciata* (*Aedes calopus*), and the Presence of Bacteria and Yeasts.—ATKIN, E. E., and BACOT, A., (Of the Lister Institute of Preventive Medicine), in *Parasitology*, Vol. 9, No. 4, pp. 482-536 London, July, 1917.

892—Observations on the Influence of Salt and other Agents in Modifying the Larval Development of the Hook-Worms *Ankylostoma duodenale* and *Necator americanus*. — NICOLL, WILLIAM, (Australian Institute of Tropical Medicine, Townsville, Queensland) in *Parasitology*, Vol. 9, No. 2, pp. 155-189. London, February, 1917.

## CROPS AND CULTIVATION

894—The Freezing of Fruit Buds; Researches made in the United States (1). —WEST, F. L., and EDLEFSEN, N. E., in *Utah Agricultural College, Experiment Station Bulletin* No. 151, pp. 2-24. Logan, Utah, February, 1917.

When the plant tissue freezes, water passes out of the cells and forms ice in the intercellular spaces. If the thawing is done slowly enough, the water gradually passes back into the cells, which again resume their functions, provided the ice has not ruptured the cell wall. If, however, the thawing is done rapidly the cells can only partially reabsorb the water and die from loss of sap.

Low temperatures thus affect the tissues in two ways; 1) they induce the rupture of the cell wall; 2) they kill the cells by causing loss of sap.

The degree of resistance to cold varies in the different species in the various periods of their development: 1) according to the degree of the concentration of the cell sap; the more concentrated the latter, the lower the freezing point; 2) according to the dimensions of the intercellular spaces which act as true capillary tubes; in fact, as a result of Walkers' experiment, it was found that liquid in a capillary tube can be cooled far below its freezing point without becoming solid.

There are three ways of combating sudden and great falls of temperature:

1) By selecting types possessing a high degree of specific resistance.

2) By choosing late kinds, in order that the trees may blossom at a time of year when frosts are of rare occurrence, and not severe.

3) By directly combating the cold by means of smoke, a method adopted with excellent results in the United States (California, Colorado, Oregon). Each orchard is furnished with a certain number of receptacles, arranged in the most suitable manner and filled with heavy oils which, on burning, produce a thick cloud of hot smoke that envelops and protects the plants while also preventing any loss of heat by radiation.

The meteorological stations, which are in communication, predict with great exactitude the approach of the cold waves and inform the fruit-growers in time to light the heavy oils in the receptacles at the right moment. This method, though reasonable and practical, is very costly and is naturally only applied in cases where the result

(1) See also Bulletin of Foreign Agricultural Intelligence, Nov., 1916.

is practically certain. Thus, if the minimum temperature predicted is so low that the rise in temperature produced by the smoke would not be sufficient to prevent freezing, it is best not to light the fires. The same advice holds good in the case of a temperature below the temperature limit. It is, therefore, most important to know the critical temperatures for the various stages of the development of the floral buds of the different varieties of fruit trees. The writers carried out a series of very careful experiments, in order to determine these critical temperatures. The apparatus or instruments, used by them were of 3 kinds.

1) *For laboratory tests*.—Three cylindrical concentric vessels, one placed inside the other. In the space between the wall of the first (the largest) and that of the second, is put the freezing mixture (ice and salt); the space between the walls of the second and third cylinders is filled with a salt solution, the temperature of the latter being kept constant by an apparatus provided with two small electric lamps which are lighted and extinguished automatically. In the interior vessel, or vessels, (for there may be 2), the branches of fruit buds are placed.

2) *Apparatus for freezing branches in the orchard*.—This consists of 2 vessels; in the first, which is filled with the freezing mixture, is placed a coil of rubber tubing which is fitted to the opening of the second vessel. Into the latter are introduced the branches of fruit buds; these must be bent, care, however being taken to avoid breaking them. The second vessel is double-walled, the space between the walls being filled with ice and salt. Through the rubber tube passes a current of air at a given temperature.

3) *Apparatus for freezing the entire tree*.—A double-walled half-cylinder made of galvanized iron and fastened on a wooden base on runners. It is 6 ft. high and 6 ft. in diameter; within the two walls is placed the freezing mixture.

In the experiments, the following factors were taken into consideration: 1) The kind of floral buds; 2) their state of development; 3) the duration of the freezing; 4) the rate of thaw; 5) the humidity; 6) the minimum temperature (marked by Bekmann's thermometer). The injury done by the low temperatures is expressed by the percentage of buds killed.

Table I gives the results obtained with Elberta peach buds (laboratory experiments).



TABLE I.—Results Obtained with *Elberta* Variety of Peach

No.	Date	No. of buds	Duration	Development	Temperature		Per Cent Damage
					Degrees F.	Degrees C.	
1		35	30 minutes	In bud	20.0	-6.66	66
2		38	20 "	Full bloom	24.0	-4.44	63
3		22	50 "	"	24.0	-4.44	64
4		42	5 "	"	25.0	-3.87	58
5		62	15 "	"	25.0	-3.87	28
6		35	10 "	"	25.0	-3.87	72
7		42	40 "	"	26.0	-3.33	40
8		37	40 "	"	27.0	-2.77	0
9		27	20 "	"	27.5	-2.50	0
10	25 April	80	10 "	Fruit setting	24.5	-4.11	30
11	26 "	16	10 "	"	26.0	-3.33	75
12	25 "	70	10 "	"	26.5	-3.05	48
13	26 "	49	10 "	"	27.0	-2.77	75
14	26 "	72	20 "	"	27.5	-2.50	56

Many experiments have been made with the Jonathan variety of apple and with Double Nattie cherries. The following are the most important results obtained:

1) There is a range of at least 5° F. (2.77° C.) between the temperature at which only about 5 per cent of the buds are damaged, and the temperature that will kill all of them.

2) In the case of Double Nattie cherries,

when the fruit is setting 29° F. (-1.66° C.) caused no damage and 24° F. (-4.05° C.) killed practically all of them.

3) With Jonathan apple blossoms in full bloom, 28.5° F. (-1.94° C.) caused no damage and 24° F. (-4.44° C.) killed about half of them.

4) The results obtained in the case of the prune tree are set forth in Table II.

TABLE II.—Test of Hardiness of Prune Buds to Frost

No.	Date	No. of buds	Duration	Development	Temperature		Per Cent Damage
					Degree F.	Degree C.	
1	25 April	142	12 hours	Full Bloom	21.0	-6.10	100
2	25 "	101	15 minutes	"	24.5	-4.11	52
3	25 "	160	15 "	"	27.0	-2.77	47
4	26 "	67	15 "	"	28.5	-1.94	37
5	9 May	30	25 "	Fruit setting	25.5	-3.61	92
6	9 "	30	25 "	"	27.5	-2.50	47

5) The susceptibility of floral buds varies during the course of their development, and reaches its maximum values during fruit-setting. The temperatures which will kill about 50 per cent of the *Elberta* peach buds are as follows: 14° F. (-10° C.), when they are slightly swollen; 18° F. (-7.77° C.) when well swollen 24° F. (-4.44° C.) when they are showing pink; 25° F. (-3.87° C.) when in full bloom; 28° F. (-2.22° C.) when the fruit is setting.

896—Measurement of the Inactive or Unfree Moisture in the Soil by Means of the Dilatometer Method.—BOUYOUCOZ, G. J., in *Journal of Agricultural Research*, Vol. VIII, No. 6, pp. 195-217. Washington, D.C., February 1917.

898—Some Observations on the Occurrence of Infertility under Trees in India.—JATINDRA, NATH SEN, (*Agricultural Chemist*), in *The Agricultural Journal of India*, Vol. XII, Part III, pp. 390-405,

plates XXXIII-XXXVII, tables 8, Calcutta, July, 1917. (1 page in Institute Bulletin.)

899—Investigations in Cost and Methods of Clearing Land.—THOMPSON, M. J., in *The University of Minnesota Agricultural Experiment Station Bulletin* No. 163, pp. 1-32. University Farm, St. Paul, Minnesota, September 1916.

Results of investigations, relating to cost and methods of preparing cut-over timber lands for farming purposes, carried out at the Minnesota Northeast Demonstration Farm and Experiment Station, near Duluth.

Fifteen acres of cut-over timber land were divided into three tracts of five acres each. On tract I the clearing was forced with dynamite; on tract II the stumps were first split with small charges of dynamite and then pulled with a machine; tract III after being brushed out was seeded to clover and timothy pasture, and cleaning



with dynamite was postponed five years until 1918.

The conclusions thus far arrived at may be stated as follows:

1. Cost (1) and method are determined largely by the character of the soil and the kind of vegetation.

2. The returns in forest products (\$43.53 per acre) covered practically the cost of brushing and other cleaning work (\$46.53 per acre) up to the stumping stage.

3. The cost per stump for blasting (\$0.06 per stump) and pulling (\$0.04 per stump) on tract II was almost identical with the cost of explosives alone (\$0.11) on tract I.

4. The cost of clearing was much less on tract I (\$0.04 per stump), since much less labour was required in piling and burning the stumps (\$0.10 per stump on tract II).

5. The cost per stump for removal was least for the man-power machine (\$0.09) slightly greater for the horse power machine (\$0.12) and greatest for dynamite (\$0.14). (This was for green timber and did not include the cost of piling which makes the use of dynamite the cheapest method by a good margin).

6. Some relation may apparently be established between the size of the stump and the size of the charge required to remove it.

7. The man-power puller will work to best advantage on the small farm, where the farmer has very limited means.

8. Under average farm conditions dynamite is usually to be preferred to the stump puller either alone or in combination. However, the plan of clearing being followed on tract III will not only be carried out at a lower cost as predicted, but is actually giving a larger net return in pasturage the first year than has been realized from the first crops from land on which the clearing has been forced. This is because forced clearing requires more labour and because land cleared by this method is relatively lacking in humus which curtails yields.

9. Following the removal of stumps from cut-over timber lands, on account of the shallow covering of vegetable matter, care should be taken to plough shallow the first time and to take immediate steps to increase the humus by seeding the land to clover and grasses, using barley or oats for a nurse crop.

The work from which these deductions were made was done on land which averaged more than two hundred stumps to the acre. These had a diameter of about 12 inches at the base and 10 inches at the cut-off.

Sixty per cent of the timber was green. The lower grades of dynamite were used on all kinds of stumps except green birch.

(1) Price of man labour 20 cents per hour and of horse labour  $7\frac{1}{2}$  cents per hour (horses work practically the entire year thus reducing the cost per hour).

Analytical data presented include:

Cost of clearing expressed in units of time and in units of exchange.—Detailed study of the various stages of the clearing work.—Forest products, a credit in cost of clearing work.—Relative cost and efficiency of dynamite alone and in combination with a puller.—Individual stump studies.—Standardization of charge, based on size, kind, condition, and location of stump.—Comparative study of dynamites of various strengths. Special study of the man-power puller.—Land clearing practice.—Farm development.

901—Dry Farming Investigations at the Sherman County Branch Experiment Station.—STEPHENS, D. E., and HILL, C. E., in *Oregon Agricultural College Experiment Station, Bulletin* 144, pp. 47. Moro, Oregon, April 1917. (2 pp. in Institute Bulletin).

Besides the experiments with spring cereals carried out at Moro further experiments with winter cereals and other cultivated plants were made there and continued from 1911 to 1916 inclusive. The meteorological observations given in this bulletin cover the period from 1911 to 1916.

The experiments included: 1) varietal tests; 2) selection; 3) crop rotation; 4) methods of soil cultivation.

*Winter Wheat.*—44 varieties were tested. Those belonging to the group of the Turkey and Crimean varieties gave the highest yields. These are the varieties chiefly grown in the west of the United States where winter wheat does well. They have a high milling value, and amongst them are found the wheats most resistant to cold. They are also very resistant to drought and are found in all the districts where dry-farming is practised; where there is a heavy rainfall Turkey wheats are not grown.

In experiments carried out over 4 years the average yields of the Argentine (32 bushels per acre), Kharkov (31.2 bushels per acre), Alberta Red and Armavir (31 bushels per acre) varieties, exceeded the local Turkey varieties by from 15 to 18%.

The experiments show the best time for sowing winter wheat to be between the 10th and 25th October. An average of from 45 to 55 lbs. of seed per acre was used. In dry soil, or where sowing is late in the autumn, these quantities must be increased.

*Barley: Winter Barley.*—This is not so resistant to cold as winter wheat. Many varieties were tested, but only 5 were retained. These are given below, together with the average yields obtained:

No.	Variety	Yield per acre (bushels)
1.	Texas winter.	49.0
2.	Maryland winter.	45.0
3.	Tennessee winter.	42.1
4.	Chevalier.	39.9
5.	Utah winter.	36.8

In 1916 a new variety, Trebe (936), was tested as a spring barley, and gave a yield of 95.8 bushels per acre.

The results of the experiments with different varieties of spring wheat, spring barley, oats, spelt and emmer described, have been published in the *U. S. Department of Agriculture, Bulletin No. 498*, and the 1916 results do not differ from those previously obtained.

**Field Peas.**—The Lima, White Canada, O'Rourke, Solo and Carleton varieties gave the highest yields. The average of 4 years is 22 bushels per acre. Grown in the same field—during 4 consecutive years, the yield was 18.8 bushels per acre.

The yield of spring wheat following on field peas was about equal to that obtained when wheat is grown on fallow land.

**Maize.**—The best results were obtained with Walla Walla White Dent, Min. No. 13, Northwestern Dent and Brown County Yellow Dent varieties.

**Potatoes.**—The highest yields were obtained with the Green Mountain, Pearls and Early Rose varieties.

A great many cultivation methods were tried for growing wheat under the summer-fallow-system. The results obtained so far prove that:

1) Autumn disking, if the stubble is heavy, is not profitable.

2) If ploughing is done early, spring disking is of doubtful value if the stubble is short.

3) Spring disking increases the yield of winter wheat if ploughing is deferred in the spring.

4) A farmer loses from 1 to 2 bushels of wheat per acre every week his ground is left unploughed after April 1, if the ground has not been well disked and all plant growth destroyed.

5) Ground ploughed in autumn with a mouldboard plough will give slightly higher yields than ground ploughed in autumn with a disk plough.

6) Early autumn ploughing, when the ground is dry, will give as high yields as late autumn ploughing when the ground is wet.

7) Deep ploughing (8 to 9 inches) will not give higher yields of spring wheat after summer fallow, than shallow ploughing (4 to 5 inches).

8) Yellow berries (grain rich in starch) in Turkey wheat are more prevalent on ground ploughed late, without being disked before ploughing, than on ground ploughed early in spring. This discovery is of great importance.

9) Subsurface or surface packers do not increase the yield of either winter or spring wheat after summer fallow.

10) Allowing weeds to grow in the summer fallow reduces the wheat yields.

11) Harrowing winter wheat in the spring is of no benefit unless it destroys

weeds. With normal wheat stands, no increase in yields has been obtained when winter wheat has been harrowed in the spring.

In the rotation experiments the highest yields of spring wheat were obtained after a summer fallow. The yields of spring wheat, following on field peas and potatoes, were nearly as high as those obtained after summer fallow. Following maize, spring disked, the yields of spring wheat were 4.6 bushels per acre less than following summer fallow.

No important increase was obtained in the yields of a crop of small grain or maize when the previous crop had been turned under for green manure.

The yields of spring wheat, oats, barley and maize, in 1916, on ground which grew alfalfa for 2 years and was left fallow for 1 year, were not so high as on ground which had been alternately cropped to grain and left fallow.

Cooperative trials were made by farmers with seed obtained from the Branch Station. These showed that the highest yielding varieties at the Branch Station, when grown by farmers, will give equally favourable results over a large dry-farming area.

904—Measures Adopted in England Respecting the Supplies and Prices of Basic Slag.—*The Journal of the Board of Agriculture*, Vol. XXIV, No. 5, pp. 580-582 London, August 1915.

905—The Nature of Cement Mill Potash.—NESTELL, R. J., and ANDERSON, E., in *The Journal of Industrial and Engineering Chemistry*, Vol. IX, No. 7, pp. 646-651. Easton, Pa., July 1917. (1 page in Institute Bulletin).

906—Studies on the Root Nodules of Non-Leguminous Plants in Japan.—SHIBATA, KEITA and TAHARA MASATO, in *The Botanical Magazine*, Vol. XXXI, No. 366, pp. 157-182, 16 fig. Tokyo, June 1917. (1 page in Institute Bulletin).

909—Effect of Frost on Plants at Leonardslee, Horsham, Sussex, England.—LODER E. G., in *The Gardeners' Chronicle*, Vol. LXII, No. 1598, p. 57. London, August 1917. (3 pp. in Institute Bulletin).

911—A New Physiological Theory of Heredity.—RABAUD, ETIENNE, in *Comptes Rendus des Séances de la Société de Biologie*, Vol. LXXX, No. 15, pp. 738-744. Paris, July 28, 1917.

The two chief theories held to-day on the phenomena of heredity—that of Bateson and that of Morgan—are both based on the conception of "factors", units independent of each other and also, it would appear, of the living substance itself. These "factors" are purely imaginary; they may

therefore, be multiplied to infinity, and the most incongruous and unlikely proprieties may be assigned to them. Having once admitted the existence of these factors, the central idea of both theories is their *segregation*, their division in definite proportions amongst the descendants of the hybrids. The questions of dominance or non-dominance take a second place, and the explanations given by Bateson and Morgan rest only on very improbable hypotheses.

The author addresses the following reproaches to theorists: 1) they have not examined in any way the processes produced in the first generation (F1); 2) they have only studied dominance, or its intermediate stage, in so far as the following process leads to segregation; 3) they have considered the question as if the second generation controlled the first, whereas it is obviously the contrary which occurs; 4) fascinated as they are by segregation they have failed to conceive any uniform function of the organism, whereas the organism is a whole.

Living substance is a complex mixture of colloidal proteins and electrolytic solutions, forming a heterogeneous whole of *plastic substances*. These substances are dependent one on the other, their external exchanges are connected with a constant interaction, and the properties of each of them are determined by the very nature of this interaction. The organism is a whole, and it is only by this conception that one explanation can be given of all the various factors of heredity.

*Heredity* is not a vague "factor" giving rise to the theory of an immaterial "power" governing the organism from without; it is simply the continuity and resemblance of particles of living matter derived one from the other. The asexual generation shows this in all its simplicity; the sexual generation gives it a more complex appearance, but it remains none the less essentially a *fact of double continuity and double resemblance* when the two gametes which unite undergo no modification (in the opposite case there is continuity without resemblance; there is no heredity).

From the point of view of peculiarities emphasized by others or together forming peculiarities which, new in appearance, transmit a double resemblance, experiments in heterogeneous fertilisation show the deleterious reciprocal actions of the sarcodes of different species. These experiments also prove this action to exist through all the degrees, from the total destruction to the simple physiological inactivity of one of the two united gametes, or of parts of these two gametes; that there is, at times, in this respect, a marked difference between the two sexes, and, finally, that the external influences modify sensibly the interaction of the sarcodes. According to the author

all fertilisation due to the union of two gametes from distinct individuals is a heterogeneous fertilisation.

Modern genetists admit that a special affinity unites two determined parts of the sarcodes, and that these parts act independently of the others; this hypothesis seems contrary to actual fact. The author, on the other hand, holds that, in the absence of precise data, it is best to state simply that certain parts of one of the gametes do not find conditions favourable to their development in the complex which results from the union of the two gametes.

With regard to the interchangeability of different racial characters in the hybrids of the second generation which may present a mixture of these characters, the author does not admit the theory of autonomous, interchangeable "factors". He regards these factors simply as another way of designating chemical bodies; since each property of a chemical body asserts itself under definite conditions, the effects of these properties will vary with the changes which these conditions undergo. All, then, is a function of the whole. When the gametes form in the hybrids of the first generation, a redistribution of the plastic substances is brought about and there result new complexes which differ little from the original sarcode (because this is composed of a certain number of the parts which constituted it previously). The various plastic substances occur in conditions fairly similar to their customary ones because the greatest change they can undergo is a modification of their exchange activity. It follows that, if the new complexes favour the physiological activity of these substances, they produce the effect which they would have produced in the pure gametes, or, at least, a very similar effect; but this effect is only the result of a given complex.

Mendelians do not admit the existence of intermediary forms, but affirm that segregation always occurs, though it is more or less marked in accordance with the number of "factors" participating in it, and which are all similar. Nothing, however, implies the impossibility of the formation of true intermediaries. Exact complete and intermediate dominance are in no way opposed to each other, they are only the extreme degrees of the heterogeneity of the gametes, quite compatible with persistence of the parts which constitute them.

For some Mendelians, the "combinations" produced in the distribution of the characters of the ascendants in the descendants are actual evolutionary variations, produced solely by hybridisation. According to the author this conception is incorrect, and the different arrangements to which the crossings give rise have no connection with any variation properly



speaking. If, at times, from one generation to another, modifications are produced, they are attributable solely to the fact that plastic substances, like all other chemical bodies, are subject to transformation; such transformation occurs especially during the course of their interactions, and may be either lasting or momentary. External influences play an important part. Variation leaves continuity intact, but interrupts resemblance.

In many cases the data gained by experience and observation give no very exact results, but they are preferable to the attitude of impressive precision found in modern works, a precision which is wholly artificial and highly dangerous, and which gives the illusion of the permanent where, essentially, only the temporary exists.

912—The Determination of the Seeds of Cultivated Plants.—FRANÇOIS, LOUIS, in *Annales de la Science agronomique*; I. Year 32, No. 1-6, pp. 30-55. Paris, January-June, 1915.—II. Year 33, No. 1-6, pp. 207-295. Paris, January-June, 1916.

Hitherto no author has collected the seeds of plants in view of their rapid determination with the aid of tables similar to those drawn up for plants. The author has undertaken this work. For the present he has restricted himself to the determination of the seeds of a certain number of cultivated plants; later he intends to publish a similar work on the seeds of the most common wild plants.

I.—In the first part seeds are discussed generally, and those of the Leguminosae, Gramineae, Cruciferae, Umbelliferae, and Compositae, the most important families on account of the large number of cultivated species they include, are reviewed successively. These general remarks are illustrated by 30 figures.

II.—The second part is devoted to tables of the characters of the seeds of cultivated plants. These tables allow of their rapid determination, which is still more facilitated by 110 figures, drawn from nature.

913—Grass and Clover Seed Imports into the United States—*Commerce Reports*, No. 107, pp. 498. Washington, D.C., May 8, 1917.

The following table, prepared in the seed laboratory of the United States Department of Agriculture, shows the amount of the various kinds of seeds subject to the seed importation act permitted entry into the United States during the fiscal year ending June 30, 1916, as compared with the nine months ending April 30, 1917:

Kind of Seed	July 1, 1915 to June 30, 1916	July 1, 1916 to April 30, 1917
	Pounds	
Alfalfa.....	3,251,796	2 882,337
Awnless brome grass.....	315	1,442
Blue grass:		
Canada.....	698,300	417,993
Kentucky.....	1,800	
Clover:		
Alsike.....	1,113,464	4,278,900
Crimson.....	4,503,983	5,004,927
Red.....	32,508,536	5,309,461
White.....	148,768	120,464
Millet:		
Hungarian or German..	117,759	287,787
Broom corn.....	1,101,556	391,740
Mixtures.....	33,297	141,069
Orchard grass.....	754,476	1,286,342
Rape.....	4,018,908	2,015,636
Rye grass: (a)		
English.....	1,510,440	1,512,955
Italian.....	382,841	439,333
Timothy.....	118,737	1,507
Vetch: (a)		
Hairy.....	67,683	223,869
Spring.....	61,613	23,800

(a) Subject to the Seed Importation Act Since November 1, 1916.

914—The Cultivation of Wheat by Hoeing —REY, EMILE, in *Journal d'Agriculture pratique*, Year 81, New Series, Vol. 30, No. 18. Paris, September 6, 1917.

The three arguments against the cultivation of wheat by hoeing are:

1) The difficulty, in many cases, of drilling in lines; it should, however, be easy to construct simple and strong drills at a moderate price, which could be used in practically all soils;

2) Shortage of labour; this difficulty could be overcome as in cultivation of other crops by hoeing;

3) The fear of smaller yields owing to the lines being of necessity wider apart.

It was for the purpose of clearing up this last point that the cultivation experiments described in the present paper were undertaken. The results obtained in 1916 with Bordeaux wheat are first discussed.

In order to be able to use horse-drawn machines, a width of 24 ins. was given to the spaces down which the animal was to pass, and these spaces were separated by double lines of wheat 8 ins. apart. Each line thus had half of the large space, 12 ins., plus half of the small space, 4 ins., a total of 16 ins., that is to say, there were two and a half lines to every metre.

Four lines were sown with the following quantities of wheat:

- 1st line.—40 seeds to the metre per line, or 1 seed every 25 mm.
- 2nd line.—40 seeds to the metre, but placed 2 and 2 in holes 0.05 m. apart.
- 3rd line.—20 seeds to the metre, 2 seeds in each hole, 0.10 m. apart.
- 4th line.—13 to 14 seeds to the metre, 2 seeds in each hole 0.15 m. apart.

The yields of the different lines only varied very slightly; that of the 25mm. line was just a little greater than the others. Preference should, therefore, be given to close sowing.



In 1916 a yield of 71.37 bushels per acre was obtained from wheat cultivated by hoeing and sown as described above on the 9th November, 1915.

The experiment was repeated this year with the same Bordeaux wheat, sown and cultivated by the same methods. There were two sowings, one on the 28th September, 1916, and the other on the 3rd November, 1916.

The first sowing gave a yield of 90.7 bushels. This increase is doubtless due to the early sowing, though this has not been confirmed because, at the time the paper was written, the second crop had not

been harvested.

The experiments prove that widening the spaces between the lines in the cultivation of wheat by hoeing, far from causing a decrease in yield, causes a considerable increase owing to the beneficial effect of the hoeing and tillage.

916—Grass Land and Ploughed Land.—STAPLEDON, R. G., (*Adviser in Agricultural Botany, University College of Wales, Aberystwyth*), in *Supplement to the Journal of the Board of Agriculture*, No. 17, 39 pp. London, May, 1917. (2 pp in Institute Bulletin).

## LIVE STOCK AND BREEDING

925—The Sheep Tick and its Eradication by Dipping.—IMES, M., in *United States Department of Agriculture, Farmer's Bulletin* 798, pp. 31. Washington, D.C., May, 1917. (2 pp. in Institute Bulletin).

927—Gradual Conversion of Colostrum into Normal Milk.—*Oesterreichische Molkerei Zeitung*, Year XXIV, No. 14, p. 129. Vienna, July 15, 1917.

During the course of last year the Station for Milk Control at Memmingen (Bavaria) made a series of analyses with the object of following the gradual transformation of the colostrum of milch cows into normal milk. The results of these analyses are given in a table which shows that if with certain data, the milk has reached the normal figure as early as the 5th day, the acidity only becomes normal on the 10th. Further, the relation between casein and albumen and the fermentation experiments have shown that the milk is not capable of caseification before the 10th day and that, for selling milk for direct consumption it is advisable to wait till the 14th day, on account of the facility with which the milk of the preceding period adheres to cooking vessels and acquires a burnt flavour.

928—Alfalfa Silage.—REED, O. E., in *Kansas State Agricultural College, Agricultural Experiment Station, Bulletin* No. 217, pp. 1-20. Manhattan, Kansas, May 1917.

Seven small silos were erected in the spring of 1914 at the Kansas Experiment Station with the purpose of studying alfalfa silage. The experiment was carried on for two years, the silos being filled for the first time in the spring of 1914 and again in the spring of 1915.

The following combinations of material were siloed:

### First Year

Alfalfa alone.  
Alfalfa and corn chop, 10 to 1.  
Alfalfa and blackstrap molasses, 20 to 1.  
Alfalfa and alfalfa-molasses feed, 10 to 1.  
Alfalfa and straw, 4 to 1.  
Alfalfa and green rye, 2 to 1.  
Rye alone.

### Second Year

Alfalfa alone.  
Alfalfa and blackstrap molasses, 20 to 1.  
Alfalfa and blackstrap molasses, 10 to 1.  
Alfalfa and corn chop, 10 to 1.  
Alfalfa and sweet-sorghum stover, 6 to 1.  
Alfalfa and green rye 2 to 1.  
Rye alone.

A palatability test, conducted each year, obtained information as to how cattle would relish the various combinations. Chemical analyses were made of the silage by the chemistry department. Bacteriological study was also made of the silage by the bacteriology department. Some of the chemical analyses are reported in this bulletin, but a detailed report of the chemical and bacteriological studies will be published separately.

During the first trial several difficulties such as insufficient weight to insure proper packing and method of sampling were encountered, but these were overcome during the second trial.

A summary of the chemical analyses of the second year experiments is given in Table I. The first analysis in each case represents the composition of the mixture as it was run into the silo. The samples for the second analysis were composites taken several times during the process of silage making and represent the finished product.

The palatability test showed that the silages containing the highest percent of acid were most palatable to the cattle.

The following deductions were made:

Alfalfa will make a fairly good quality of silage and it will be readily eaten by cattle if fed within a few months after being siloed.

TABLE I.—Percentage Composition of Alfalfa Silage. Second trial 1915-1916

Silo No.	Description of Sample	Moisture	Ash	Protein	Crude Fibre	Nitrogen Free Extract	Ether Extract	Acidity	Sugar
1	Alfalfa alone—								
	When filled.....	62.75	4.60	6.94	10.32	13.63	1.76	0.450	1.039
2	Taken out.....	67.23	4.17	5.51	9.75	12.23	1.11	1.483	—
	Alfalfa and molasses, 20:1—								
3	When filled.....	70.83	3.21	4.75	6.93	13.10	1.18	0.394	1.157
	Taken out.....	73.08	2.80	4.48	7.67	11.00	0.97	2.413	—
4	Alfalfa and molasses, 10:1—								
	When filled.....	64.85	4.95	5.31	7.53	16.07	1.29	0.389	5.890
5	Taken out.....	63.53	5.22	5.93	9.49	14.44	1.39	3.009	—
	Alfalfa and corn chop, 10:1—								
6	When filled.....	66.80	3.25	5.25	7.21	16.02	1.47	0.378	0.900
	Taken out.....	67.08	5.23	5.10	8.59	12.79	1.20	2.242	—
7	Alfalfa and sorghum stover, 6:1—								
	When filled.....	64.75	4.15	5.69	10.54	13.27	1.60	0.387	0.696
8	Taken out.....	62.30	5.56	5.51	11.26	13.82	1.55	1.856	—
	Alfalfa and rye, 2:1—								
9	When filled.....	63.25	5.36	6.00	9.23	9.13	1.53	0.495	3.170
	Taken out.....	67.40	4.21	4.93	10.20	11.86	1.40	1.975	—
10	Rye alone—								
	When filled.....	62.25	3.65	3.80	6.17	23.05	1.08	0.450	1.870
	Taken out.....	62.27	3.72	3.83	13.17	15.67	1.34	1.917	—

Observations during the experiment indicate that when it is possible to make alfalfa into first-class hay it should not be put into the silo. During a rainy season it is almost impossible to get the hay up without some damage and under such condition siloing may be justified.

The addition of carbohydrate material, such as corn meal, blackstrap molasses, sweet-sorghum stover and green ryes to alfalfa when put into the silo resulted in preserving it for a longer time than when the alfalfa was siloed alone. Of the supplements used in these experiments blackstrap molasses proved to be the best, corn chop was next in order, followed by sweet-sorghum stover and green rye. The mixture of alfalfa and blackstrap molasses was the most practical one used. Inasmuch as the addition of the molasses to alfalfa did not increase the bulk, it was possible to preserve large quantities of alfalfa within a comparatively small space.

There is as much acid produced in alfalfa silage as in kafir or cane silage. This would indicate that the acid content of silage is not always an index to the quality of the silage.

Rye alone will make a fair quality of silage when preserved in large silos and cut when the grain is in the late milk and early dough stages.

29—Studies of Free-Martins.—I. LILLIE, FRANK R.: The Free-Martin; a Study of the Action of Sex Hormones in the Foetal Life of Cattle, in *The Journal of Experimental Zoology*, Vol. 23, No. 2, pp. 371-452. Philadelphia, Pa., July 5, 1917.—II. CHAPIN, CATHARINE LINES, A Microscopic Study of the Reproductive System of Foetal Free-Martins, *idem.*, pp. 453-482. (2 pp. in Institute Bulletin).

930—Family Performance as a Basis for Selection in Sheep.—RITZMAN, E. G.,

and DAVENPORT, C. B., in the *Journal of Agricultural Research* Vol. X, No. 2, pp. 93-97. Washington, July 9, 1917.

Two methods of selecting mates are in current use. The commonest is that of picking out the best individuals or those that exhibit the traits which are desired in the offspring, and is based in the principle that the somatic traits of the parent are the best index of its germinal determiners, so that somatic selection is, at the same time, gametic selection. This principle, is however, false, because the animal may be heterozygous in any trait, that is to say that, besides determiners for a certain character, it may also have allelomorphic cells where this character is absent. For this reason this method gives very slow progress, and sometimes none at all.

The second method of selection is based on the principle that the individual's somatic traits constitute a partial and imperfect index to its germ plasm, and that a better index is obtained by considering the characters of as many close relatives as possible.

These principles have been applied in the sheep breeding experiments carried out at the New Hampshire Experiment Station. The aim of the experiments is to produce a race of sheep combining good qualities of conformation, size and wool. These qualities were judged by the following scale of 100 points:

SIZE.—Body weight, 5 points; height at shoulder, 5 points; chest circumference, 5 points; loin width, 5 points; hind-leg circumference, 5 points.

WOOL.—Weight of fleece, 10 points; length of staple, 10 points; diameter of fibre 10 points; crimp of wool, 10 points.

CONFORMATION.—Ratio, head width: length, 3 points, ratio, neck length: circumference, 2 points; ratio, fore-leg length: trunk length, 10 points; ratio, chest width: depth, 5 points; ratio, chest width: trunk length, 5 points; ratio, loin width: trunk

length, 5 points; ratio, croup length: trunk length, 5 points.

As only a few rams are bred, selection is much more rigorous for males. The general method of selection is illustrated by the following example: In the 1916 selection the available ram lambs belonged to 12 "families". A "family" includes brothers, sisters, and the two parents. In selecting the character "body weight", the average weight of all the members of each family group at a fixed age is calculated. The family having the highest average weight is graded 1; the next highest, 2; and so on. If two families have the same average they receive the same number. Naturally, each family has different numbers for each character. When the rank of each family with respect to every quantitative trait has been determined, the rank is multiplied by its appropriate weight factor, as in ordinary scoring. The family which gives the lowest sum of products grades highest.

The rank of the families having been thus established the best ram is chosen from each. In this case the individual is also considered. If, for example, the best ram from the best family is sickly or has any physical defect, he is discarded for the best ram of the next best family. Thus the consideration of the relative values is supplemented by that of the "idea" type at which the selection aims.

These experiments are not yet finished, but the uniformity and excellence of the progeny obtained already show that this method is well worth the extra labour it entails.

931—Investigation in Animal Nutrition: Beef Production.—HAECKER, T. L., in *The University of Minnesota Agricultural Experiment Station Bulletin* No. 155, pp. 1-32. St. Paul, Minn., March, 1916. (2 pp. in Institute Bulletin.)

932—Experiments in Feeding for Beef in Canada.—I. HUTTON, G. H., and FAIRFIELD, W. H., Feeding for Beef in Alberta, (Results of Experiments at Dominion Experimental Stations in Alberta from 1909 to 1915) in *Dominion of Canada Department of Agriculture, Experimental Farms Bulletin* No. 30, pp. 1-38. Ottawa, 1916.—II. MCKILLICAN, W. C., Experiments in Steer Feeding in Manitoba (A Summary of Tests at the Experimental Farm, Brandon, Manitoba, from 1892 to 1912), in *Dominion of Canada Department of Agriculture, Experimental Farms Bulletin* No. 13, pp. 1-24. Ottawa, 1916. (2 pp. in Institute Bulletin—)

934—Fertility and Age in the Domestic Fowl.—PEARL, RAYMOND, in the

*Proceedings of the National Academy of Sciences of the United States of America*, Vol. 3, No. 5, pp. 354-356. Washington, D.C., May, 1917. (2 pp. in Institute Bulletin.)

935—The Feeding of Poultry.—*The Journal of the Board of Agriculture*, Vol. XXIV, No. 2, pp. 189-190. London, May, 1917.

In view of the necessity of reserving as much grain as possible for human consumption it is necessary to ascertain whether poultry keeping increases or decreases the national food supply. In order to solve this question the President of the Board of Agriculture calls the attention of poultry-keepers to the following facts.

On an average, an 18 months old pullet has eaten 100 lbs. corn and meal, or their equivalent in other foodstuffs, it has laid 180 eggs, and, when killed, weighs, about 4½ lbs. The dry edible human food contained in its carcass and in the eggs it has laid is about 6½ lbs., so that it has eaten about 15 lbs. of corn and meal, or their equivalent, per 1 lb. of human foodstuff produced. Therefore, if the grain and meal eaten by the hen are fit for human food, poultry-keeping reduces the national food supply. On the other hand, if the pullet is fed on scraps, waste, tail corn, or other materials unfit for human consumption, the national food supply is increased.

If this test be applied to other animals, the pig is found to be a more economical source of food. The following suggestions are, therefore, made to poultry-keepers.

1) Poultry should be kept in small numbers only, so that they may be fed exclusively on scraps or other material unfit for human food.

2) When the quantity of such food available is sufficient to keep a pig, the pig should be preferred to poultry.

3) At the end of the laying season the number of hens kept should be reduced, and the number of poultry kept for fattening restricted to the amount of material unfit for human consumption available for feeding them.

938—The Biology of the Spawning Migration of Shad (*Alosa* spp.)—ROULE, LOUIS, in *Comptes rendus des Séances de la Société de Biologie*, Vol. LXXX, No. 15, pp. 705-706. Paris, July 28, 1917.

939—Carajat Incubator for Hatching Trout Fry.—GERDIL, H., in *La Vie agricole et rurale*, Year 7, No. 35, pp. 151-154. Paris, September 1, 1917. (1 page in Institute Bulletin.)



## FARM ENGINEERING

- 940—Machine Cultivation Trials at Mettray France.—SAGNIER, HENRI, in *Journal d'Agriculture pratique*, Year 81, No. 15, pp. 283-284. Paris, July 26, 1917. (1 page in Institute Bulletin).
- 941—The Moline Farm Tractor.—I. *Il Giornale di Riscicoltura*, Year 7, No. 10, pp. 133-136, Vercelli, May 30, 1917. —II. *Engineering*, Vol. CIV, No. 2692, p. 131, London, August 3, 1917. (1 page in Institute Bulletin).
- 942—The Crawley Agrimotor.—*The Implement and Machinery Review*, Vol. 43, No. 508, pp. 391-392. London, August 1, 1917. (1 page in Institute Bulletin).
- 944—Patent Stone Sand and Asphalt Distributing Machines.—*Engineering News-Record*, Vol. 79, No. 4, pp. 191-192. New-York, July 26, 1917.
- 945—Simultaneous Harvesting and Breaking-up of Stubble with a Tractor.—RINGELMANN, M., in *Bulletin de la Société d'Encouragement pour l'Industrie Nationale* Vol. 127, No. 3, pp. 594-599. Paris, May-June, 1917. (3 pp. in Institute Bulletin).
- 948—A Potato Storehouse.—I. RINGELMANN, MAX, in *Journal d'Agriculture pratique*, Year 81, Vol. 30, No. 5, p. 91, 1 fig. Paris, March 8, 1917. —II. KROTOFF, M., in *Bulletin de l'Union des Agriculteurs d'Egypte*, Year 15, No. 120, pp. 83-87, 1 fig. Cairo, June-July, 1917.

## RURAL ECONOMICS

- 950—Farm Management Investigations in the United States.—(Report of the Committee on Investigations of the American Farm Management Association) in *Record of the Proceedings of the Seventh Annual Meeting of the American Farm Management Association*, pp. 87-107. Washington, D.C., 1917. (5 pp. in Institute Bulletin).
- 951—Farming in the Bluegrass Region (A Study of the Organization and Management of 178 Farms in Central Kentucky).—ARNOLD, J. H., and MONTGOMERY, FRANK, in *U. S. Department of Agriculture Bulletin*, No. 482 (Office of Farm Management), pp. 1-32. Washington, D.C., February 19, 1917.

## AGRICULTURAL INDUSTRIES

- 953—A Comparison of Several Classes of American Wheats and a Consideration of Some Factors Influencing Quality.—THOMAS, L. M., in *U. S. Department of Agriculture Bulletin*, No. 557, pp. 1-28. Washington, D.C., May 18, 1917.

The investigations reported in this Bulletin were made in the Office of Grain Standardisation of the Bureau of Plant Industry in cooperation with the Office of Markets and Rural Organization, in connection with the enforcement of the United States Grain Standards Act. The fitness of the several types of wheat for the manufacture of white flour and the adaptation of the flour from these several types to the manufacture of different kinds of bread products were studied, in view of a division of wheats of distinctly different character into general classes. A comparative valuation of the wheat within any one class was also made.

In all, five distinct classes of wheats,

grown in various sections of the United States, have been studied:

1) Soft red winter wheat, or "red winter," as it is better known on the market, is the principle class of wheat grown in sections east of the Mississippi River, in the State of Missouri, and in parts of the States adjoining the west and south.

2) Hard red winter wheat is grown chiefly in Nebraska, Kansas, and parts of Oklahoma and Montana, although small quantities are grown in the adjoining States.

3) Hard red spring wheat is grown in North Dakota, Minnesota, South Dakota and Montana. This wheat is more generally known commercially as northern spring wheat.

4) Durum wheat is grown in about the same territory as hard red spring wheat and to a limited extent in the southern great Plains area and Intermountain and Pacific Coast States.



5) White wheats are grown to a comparatively small extent in some of the Eastern States and more generally in the Intermountain and Pacific Coast States. Only a limited amount of work was done on this class of wheats, and in this respect reference is made only to some factors relating to the quality of the flour produced from them. There are other classes of wheats, particularly the western red wheats, both spring and autumn sown, of which no mention is made in this bulletin.

A partial survey of the results of this work is presented in the following summary:

1) Normal, plump, dry and sound wheat of all classes yields approximately the same percentage of flour. Over 80 per cent of the samples of each of the three classes of the more common wheats, soft and hard red winter and hard red spring, yielded between 67 and 75 per cent flour.

2) There is direct relation between milling yield and the moisture content of wheat, and in a general way the yield varies inversely with the moisture content. Were it possible to eliminate other factors, such as variation in plumpness of the kernels, it is probable that this relationship would be more apparent.

3) The weight per 1,000 kernels or average weight of kernels, has very little value in judging the potential flour yield.

4) Although there are frequent exceptions when individual samples are considered, average results show a very striking relation between weight per bushel and flour yield, the latter varying directly with the former. The ratio between these two figures, however, is not quite the same for the different classes nor is it the same for all varieties within each class.

5) In colour the bread from the flour of the various classes of common wheat shows about the same ranges and averages. The flour from durum wheat is considerably more creamy and thus averages several points lower than that of any other class.

6) Bread from all normal durum samples has a tint or colouration varying from slightly creamy to bright yellow, while, of the hard red winter samples, 77.6 per cent show a noticeable creamy tint, of the hard red spring samples 69.5 per cent, and of the soft red winter samples only 18.9 per cent.

7) The general results indicate that test weight and soundness when considered together, are of far more value in appraising quality than when either is considered by itself.

8) Small amounts of inseparable material are generally accompanied by a decrease in flour yield, as would be expected, since, as a rule a large part of such material usually finds its way into the bran and shorts.

9) Loaf volume and texture are the two factors which are considered as indicative

of strength. While a great range of strength was found within each class of wheat the averages for each class show considerable differences between the various classes when considered as a whole. Given in order from weakest to strongest the classes are soft white, soft red winter, durum, hard red winter, and hard red spring wheat.

10) The average loaf volume in cubic centimeters for each of these classes is soft white wheat, 1.909; soft red winter, 1.965; durum 2.070; hard red winter, 2.219; and hard red spring, 2.421. In the matter of texture the several classes stand in the same order, except that soft red winter has a slight advantage over durum wheat.

11) Of the four more important classes under consideration, durum is the highest in crude-protein content; hard red spring, second; hard red winter, third; and soft red winter, fourth.

12) High crude-protein content as a rule is accompanied by high strength, but the relation between these two factors varies with the different classes of wheat, and extremely high crude-protein content is sometimes accompanied by a decrease in baking strength.

12) The average water absorption of the flour from durum and from hard red spring wheat is about the same and that of hard red winter is only slightly lower.

The water absorption of the soft wheats averages from 3 to 4 per cent lower than for the hard wheats. The range of water absorption of each class varies within wide limits.

14) There is a direct relation between the water absorption of the flour and the bread yield of a unit quantity of the same. As a rule, the higher the absorption the greater the weight of the loaf.

956—The Carbone Method for Retting Textile Plants by Microbiological Action (1).—I. CARBONE, DOMENICO, Sopra un bacillo macerante aerobico, in *Annali d'Igiene sperimentale*, Vol. XXVI, Pt. 1, pp. 57. Rome, 1916.—II. CARBONE, DOMENICO, Sulla macerazione rustica della canapa: Prima nota, in *Le Stazioni Sperimentali agrarie italiane*, Vol. IV, pp. 261-299. Modena, 1917.—III. TOMBOLATO, ARTURO, Il metodo Carbone per la macerazione microbiologica delle tessili e la sua importanza pratica. Abstracted from: *I Progressi nelle Industrie Tintorie e Tessili*. Bergamo, 1917. (1 page in Institute Bulletin).

(1) See also *Agricultural Gazette*, May, 1917, page 427.

960—Investigation of the Methods and Costs of Marketing Butter in Kansas.—MACKLIN, THEODORE, in *Kansas State Agricultural College, Agricultural Experiment Station, Bulletin* No. 216, pp. 1-80. Topeka, Kansas, April 1917. (2 pp. in Institute Bulletin).

## PLANT DISEASES

967—The Acidifying Action of the Basidiomycete *Coniophora Cerebella* on Timber.—PETRI, L., in *Annali del R. Istituto superiore forestale nazionale*, Vol. II (1916-1917), pp. 433-447. Florence, 1917. (1 page in Institute Bulletin).

969—A New Disease of Wheat, Probably of Bacterial Origin.—SMITH, ERWIN, F., in the *Journal of Agricultural Research*, Vol. IV, No. 1, pp. 51-53. Washington, D.C., 1917.

Preliminary notice is given of a disease of *Triticum* spp. which has appeared in various parts of the United States of America. It was first observed in 1902 on wheat from Indiana, being considered as probably of bacterial origin. It was again found, in 1915, in large quantities of material from Kansas and Indiana. In 1917 the disease was observed in Texas, Oklahoma, Kansas, Arkansas, Missouri and neighbouring states.

The disease is being fully studied in the Washington Plant Pathology Laboratory in collaboration with the Kansas and Wisconsin Experiment Stations.

The disease is characterized by the appearance of black, longitudinal, parallel stripes of varying depth, on the glumes of the wheat when it is nearing maturity. The stripes are usually more numerous and

marked on the upper parts, where they often fuse; they frequently reach to the base of the glume. Inside, in the parts corresponding to the stripes, the glumes have black or brown spots, invaded by bacteria; in some cases fungi are also found. In bearded wheats the awns are often attacked and discoloured, at least at their base. In the advanced stages of the disease the rachis and culm are covered with black or brown streaks. The leaves too are attacked. When the disease is serious the caryopses appear very shriveled, and, sometimes, there are cavities filled with bacteria in them. As the ears are stunted and the caryopses considerably shriveled there is a corresponding reduction in yield.

For next autumn, only seed from fields known to be free from this disease should be used, and no manure should be used derived from animals whose food or litter contains straw attacked by it. Such manure should only be used on fields in which neither wheat nor other cereals are grown. Animals fed on the straw of the diseased wheat should be kept away from fields in which wheat is to be grown.

974—New Species of *Peridermium* on Pinus in the United States.—HEDGCOCK, GEO. G., and HUNT, N. REX, in *Mycologia*, Vol. IX, No. 4, pp. 239-242. Lancaster, Pa., 1917.

## INJURIOUS INSECTS

977—Observations on the Coccidae of Europe, Africa and America.—NEWSTEAD, ROBERT, in *Bulletin of Entomological Research*, Vol. VII, Part 4, pp. 343-380, fig. 1-27, plates VI-VII. London 1917. (2 pp. in Institute Bulletin).

982—*Euzophera osseatella*, a Microlepidopteron Attacking Potatoes, in Egypt.—CASORIA, M., in *Bulletin de l'Union des Agriculteurs d'Egypte*, Year 15, No. 120, pp. 77-81. Cairo, 1917. (1 page in Institute Bulletin).

## CO-OPERATIVE FRUIT AND VEGETABLE CANNERIES IN THE UNITED STATES

Growers of fruit and vegetables in many parts of the United States have thought to become rich by disposing in a co-operative cannery of such of their surplus products as could not be marketed in a fresh state. Such hopes have been largely unrealized. Of some \$158,000,000 worth of canned and dried fruit and vegetables marketed in 1914 the growers sold only \$3,500,000 worth.

Practically all the co-operative canneries in the United States are found in the Pacific North West and California. These can-

neries have individual turnovers ranging from \$50,000 to \$1,500,000. Together with the Oregon Agricultural College, the Office of Markets and Rural Organization made a survey of the canning industry of the Pacific North West; and it also investigated co-operative canning plants in California and other parts of the United States. These studies enabled the essentials of success and the reasons for failure in this industry and this country to be ascertained.

It should be borne in mind that a canning

business should not exist for by-products, that if built up primarily to get rid of lower-grade fruit and vegetables it is not likely to be successful. Many canneries have failed because they were organized only to utilize that portion of a fruit or vegetable crop which could not be marketed in its fresh state because of its deteriorated condition or bad quality.

The most successful co-operative canneries now at work handle a wide variety of produce through a long season, some beginning with strawberries in May and ending in December with late vegetables. By making use of the various crops as they ripen the busy season may be made to last about six and a half months.

The cannery should be situated as near as possible to the centre for the production of its material. The quantity of produce delivered to it as material should moreover allow it to transact such a volume of business that the overhead expenses will represent a small unit of cost per case. Canneries should generally be near a centre of population from which they can secure at a reasonable price the necessary pickers and other supplementary help. In many farmers' co-operative canneries the skilled labour used in the manufacturing department is supplied by the sons and daughters of the farmer co-operators. These young people earn pocket money and the cannery secures reliable and skilled help, year by year. In some districts the berry-picking season is looked upon as a holiday time, and many families in the Pacific North West and in California look forward to it.

From the neighbouring towns they—especially the women and children—move into the berry fields and spend from two to six weeks as pickers. They are fairly well paid and have an excellent outing. One cannery employs as many as 15,000 pickers in a season and provides good accommodation for camping.

The sanitary condition of a cannery should be satisfactory. There should be a plentiful supply of good water. The roads should be sufficiently good and there should be suitable provision for transport.

Proximity to markets is important.

Managers of several co-operative canneries state that a lack of sufficient capital is their chief handicap. Canning is a manufacturing business and therefore needs a much larger capital than the average co-operative enterprise. To be successful the association should have enough paid-up capital to make the plant and equipment practically free of debt when the first canning season opens. A considerable sum is needed for operating expenses before the final returns for canned goods are received, this last event often taking place eighteen months or more after the raw material is delivered.

A liberal fund is therefore necessary for

the making of advances to growers when they deliver their produce. Such advances range from 35 to 65 per cent of the estimated value of the produce. If the plant be free of debt, enough money can usually be obtained from banks to finance the business of the early season, and in the later season additional money can be raised on warehouse receipts of the canned goods. Some of the larger canneries have as much as \$200,000 worth of canned goods in their warehouses at one time, and need a proportionately large surplus fund and good credit to finance their business during the canning season. Such credit was possessed by a Western farmers' cannery which recently bought a trainload of sugar for its year's business, having secured for such purpose a loan of \$85,000 from one bank.

Membership of a co-operative cannery should not be acquired for less than \$25. A grower who has enough produce to interest him in the cannery ought to be willing to invest at least \$100 on acquiring membership or to take stock up to that amount.

The advice of someone well qualified to judge of buildings and equipment should be secured when the purchase of these is being considered; and a cannery should not be constructed except on plans made by experienced engineers or cannery men.

The manager should be familiar with manufacturing processes and with organization, should have a knowledge of accounts and should be an efficient salesman. In the larger canneries he should have as assistant a manufacturer, who should have had practical experience in the particular kind of canning for which he is engaged.

A regular supply of the right kinds of produce is necessary if a cannery is to do sufficient business. Therefore contracts for supplies should be, if possible, for a number of years. Wherever the size of the business justifies the expense a cannery should employ a "field man" to work among the farmer co-operators, helping them to solve their difficulties, hearing their complaints, explaining the principles and advantages of association.

Some canneries which handle large quantities of berries have a department for sending fresh fruit to distant markets. When the market for fresh fruit is profitable all fruit of suitable quality is sent away—the ripe fruit goes to neighbouring markets and fruit ready for immediate use to the cannery. When markets are not favourable all the fruit is canned and held until it can be sold at fair prices. One co-operative canning association has sent as many as twenty-one refrigerator-carloads of fresh red raspberries in one express train, while it was operating two large canneries. Several co-operative canneries in the Pacific North West also operate evaporators in



which plums, loganberries, apples and some raspberries are dried. Other canneries have vinegar plants.

It is necessary that the manager keep in close touch with markets and know of their demands and conditions of trade preferences and of any improvements made in the canning business, in order that he may market products to the best possible advantage. A large portion of a season's output is sold for future delivery, and therefore great care must be taken in estimating output in order to prevent an oversale.

It may happen that cars are sold as early as April for delivery in September or October.

In one State a large number of the co-operative canneries have formed an association and appointed a joint agent, who is a canned goods broker, to handle their output. There is much need for greater co-operation among farmers' canneries for the purpose of standardizing output and forming a central agency for sales, in so far as the law allows.

## THE FIRST YEAR OF THE UNITED STATES FEDERAL FARM LOAN ACT

The Federal Farm Loan Act was passed on 17 July, 1916, (1). It is interesting to take stock of the difficulties that have occurred in applying it and of the degree in which it has satisfied the need for credit of the rural population of the States. The twelve Federal Land Banks had up to 1 August, 1917, made loans amounting to \$3,940,400. This total represents loans approved and actually made out of a sum of about \$100,000,000 for which application was made. About \$50,000,000 of this latter sum was applied for through formally

constituted channels. The remainder represents the amount which National Farm Loan Associations still unchartered have reported that they wish to borrow as soon as they have perfected their organization.

The lending business did not begin in earnest until July. During that month the machinery of the system was thoroughly in working order and money was put out rapidly. The following figures explain the lending business in July, 1917.

FEDERAL LAND BANKS	Amount Applied for	Amount of Approved Loans	Amount of Loans Made	Total Amount of Loans Made up to August, 1917
Springfield.....	\$ 735,785	\$ 479,100	\$ 29,900	\$ 36,600
Baltimore.....	1,261,211	551,400	177,000	257,057
Columbia.....	2,199,423	1,042,824	43,200	43,200
Louisville.....	1,547,257	2,072,200	243,000	250,000
New Orleans.....	10,417,708	3,868,878	149,950	210,265
St. Louis.....	4,553,560	1,651,620	87,899	—
St. Paul.....	3,541,250	1,290,300	83,400	115,100
Omaha.....	3,435,326	985,090	55,450	101,150
Wichita.....	3,435,090	2,968,950	784,900	1,771,100
Houston.....	2,788,681	1,350,561	93,130	121,130
Berkeley.....	—	—	—	391,700
Spokane.....	3,953,361	2,724,880	434,630	642,005
	\$34,310,652	\$16,016,853	\$2,232,059	\$3,940,407

(1) See Bulletin of Foreign Agricultural Intelligence, September, 1918.

The Federal Farm Loan Board believes that loans will now be made with increasing rapidity. The Federal Land Banks were at first handicapped by lack of funds. Some of them made loans in excess of their capital stock, themselves borrowing money to do so in the outside market. The sale of farm loan bonds is however now well under way. The Land Banks and the private banking syndicate which are marketing these securities have already obtained subscriptions aggregating about \$30,000,000. As soon as this money is collected it will be issued to the farmers at the 5 per cent farm mortgage rate which has

been established by the board. The bonds yield interest at the rate of  $4\frac{1}{2}$  per cent. The banks expect to pay the expenses of operation out of the margin of  $\frac{1}{2}$  per cent. It is the intention of the board ultimately to bring about such complete organization and so to perfect its machinery that this margin will be only  $\frac{1}{8}$  per cent. The policy will be to put the saving into the pocket of the farmer rather than the investor in bonds, that is to reduce the mortgage rate rather than increase the yields of bonds. What effect an increase in the war bond rate will have on the sales of these land securities is conjectural. The board

believes that the land bonds will go on selling because it will tell the public that to finance the farmer is as important to the war as to finance the soldier, if not more so.

Two elements retard the making of farm loans—the lack of trained men in the banks and the difficulty as to farm titles.

The Federal Land Banks are paying small salaries to appraisers of land, which has made it difficult for them to secure the competent service needed to make their loans safe. Their work is moreover new and they cannot yet be presumed to have passed the experimental stage.

As regards titles it has been found on examining applications for loans that an unexpectedly large number of farmers cannot furnish legal evidence of these. They are not uncertain but merely unattested. Under the statute the Land Banks cannot lend on lands held by such uncertified titles. There is further a lack of uniformity, the attestation of titles being more difficult in some States than others, and every farm loan district embraces several States.

The banks have been led to advocate the adoption of a uniform system of registering titles. Should it be made universal by Federal law farmers would have no difficulty in proving their titles by a reference to the registers. It may be expected that the Farm Loan Board will make some recommendation of this kind to Congress in next winter's session.

The board originally contemplated selling from \$100,000,000 to \$150,000,000 in farm loan bonds a year. Unless the machinery for the actual granting of loans is

made to work more quickly it is unlikely that they will be able to do this.

A considerable access of business was expected this autumn because farmers would want money for autumn planting. The board hopes that before next spring—the first full planting season since the system has been completely at work—it will be able to grant loans more expeditiously on all properties which deserve to be financed.

The Federal Land Banks and the Federal Farm Loan Board may prove to be suitable means for the solution of problems even of national importance. It is reported that in certain Southern States the British government has requested British subjects holding in them farm mortgages to call for the payment of the loans and withdraw the money from the country to invest it in British government war issues. It is credibly asserted that the mortgage loans affected amount to nearly \$110,000,000—far more than the farmers would immediately procure from American investors. Only the Federal Farm Loan system seems to be in a position to take up these obligations. It may have to solve a yet larger problem. In order adequately to participate in the flotation of the war bonds of the United States government, the American life insurance companies may have to reduce to some extent their present large holdings of farm mortgages. Here again the Federal Farm Loan System may be the only recourse open to farmers obliged to pay off maturing mortgages which they had expected to be able to renew indefinitely.

## SETTLEMENT OF EX-SERVICE MEN WITHIN THE BRITISH EMPIRE AFTER THE WAR

The report of the committee appointed by the Secretary of State for the Colonies to consider the measures to be taken for settling ex-service men within the British Empire after the war has recently been issued. The terms of reference were: "To consider and report on the measures to be taken to settle within the empire ex-soldiers who may desire to emigrate after the war. To collect and prepare for distribution to intending emigrants of this class information which shall show clearly the nature of any facilities afforded by the governments of the dominions and States. To advise as to the best methods of making this information accessible to the troops. To make recommendation as to the steps which should be taken by His Majesty's Government, in concert with governments of the States and dominions, for the constitution of a central authority to supervise and assist such emigration."

The committee were informed that the term "ex-soldiers" included ex-service men

from both the navy and the army and their wives and children. The committee felt themselves at liberty to consider also the case of widows and orphans of ex-service men and of women who, like nurses and munition workers, had done war work.

Evidence as to facilities for settlement on the land was taken from *a*) representatives of the overseas dominions, *b*) various bodies dealing with emigration, *c*) similar bodies dealing with settlement within the United Kingdom. The committee hold that there is no conflict between the opportunities offered at home and overseas, for both should have place in one great policy of settlement within the empire.

### THE ESTABLISHMENT OF RELATIONS WITH THE TROOPS

The committee hold that the proper time for distributing information as to opportunities for settlement among the troops is that which will elapse between the cessa-

tion of hostilities and the grants of furlough which will precede discharge.

The committee understand that the authorities contemplate issuing to each man, before demobilization, a form on which he will state *inter alia* his wishes as to future employment, and that demobilization committees will be appointed, in connection with the Employment Exchanges to advise the men as to the various kinds of employment available.

The committee therefore suggest that:

1) The form which each man receives should enable him, if he so desire, to express his preference for employment in the overseas dominions of the empire;

2) The names of all those who thus express such a preference should be sent for record, with all other relevant particulars concerning them, to the Central Emigration Authority to be constituted as stated below;

3) The local demobilization committees, in order to advise men as to opportunities overseas, should be in direct correspondence with the Central Emigration Authority, which should issue the necessary literature and full instructions; representatives of the Central Emigration Authority should visit these committees and attend as many of their meetings as possible; wherever possible men well acquainted with overseas affairs should be nominated by the Central Authority as permanent members of the local committees.

#### THE SETTLEMENT OF EX-SERVICE MEN AT HOME

The existing schemes for the settlement on the land within Great Britain of discharged soldiers and sailors are on a small scale. They provide for the settlement of no more than 240 men or if their wives and families be taken into account of 1,200 persons. In addition general legislation has provided for all tillers of the soil by the guaranteed minimum price for wheat and oats from 1917 to 1922, and by guaranteeing a minimum wage of 25s a week to agricultural labourers.

The attention of the committee was mainly directed to emigration.

#### THE CONSTITUTION OF A CENTRAL EMIGRATION AUTHORITY

The committee lay stress upon the necessity for the prompt creation of a new Central Emigration Authority.

They make the following suggestions with regard to it:

1) It is undesirable to set up an authority to deal with the emigration and settlement of ex-service men, which would be independent of any existing or prospective authority concerned with emigration generally;

2) The overseas governments should be closely connected with the new authority;

3) It should be in working order before the war is over;

4) It should be so constituted as to be capable of carrying out any emigration policy on which the home government, in consultation with the overseas governments, may decide.

The committee recall that the Dominions Royal Commission recommended that a central authority should be set up as a department of the home government; and that a consultative board should be appointed, which should include representatives of the overseas dominions and others, and advise the new authority, securing the necessary co-operation between the home and overseas governments with regard to migration. The committee go further than the Royal Commission for they consider that the representatives of the overseas dominions should be connected with the new authority not in an advisory but in an executive capacity.

The committee propose that actual executive duties should be entrusted to a board for whose work a minister of the United Kingdom should be responsible. This minister must appoint the board's chairman, who should be able to devote his whole time to its work. Its other members should include one representative nominated by each of the following: the Colonial Office, the War Office, the Board of Trade, the Local Government Board, the Ministry of Labour, the governments of Canada, Australia, New Zealand and South Africa, one of the Agents General for the Australian States and one of the Agents General for the Canadian Province. The board should also have five unofficial members of whom two should be women.

#### THE QUALIFICATIONS OF EMIGRANTS

Emigrants should be qualified first by training or experience and secondly by the possession of capital.

The committee lay particular stress on the necessity of providing *training* for men who have not already had agricultural experience. They should generally receive their training in the place of emigration either on a training farm or similar institution or as labourers on a privately owned farm. During the period of training it will be impossible for their wives and families to live with them, and this justifies a postponement of the emigration of many women and children which will lessen the difficulties of transport. In some cases men who have been settled for a short time in a State or Dominion will be able to obtain reduced passages for their wives and families.

The committee recommend that if, as seems probable, the emigration overseas even of the men be delayed for a few months after the war by the lack of available transports, some knowledge of agricultural work



A TABLE ILLUSTRATING GOVERNMENT SCHEMES FOR SETTLEMENT OF EX-SERVICE MEN OVERSEAS

Dominion or State	Extent of Individual Grant	Conditions	Crops	Government Loan	Repayment	Whether previous experience necessary	Training	Capital Necessary	Other Remarks
CANADA—									
1. Dominion Lands...	160 acres in Manitoba, Alberta, Saskatchewan	Free	Wheat, mixed farming	£400 (1) In maximum	In 15 years at 5 per cent	Yes	Dominion Demonstration Farms or with approved Farmers	None	Available also for widows of soldiers and sailors who have died on active service.
2. New Brunswick	10-160 acres	Cost governed by cost of improvements (clearing, well, house)	Dairy farming, fruit, potatoes	£100-£300	10 per cent on application, balance within 20 years	Yes	Demonstration Farms	£100-£400 desirable	Community settlements to be established, accommodating from 100 to 250 families, with church, public hall, schools, etc.
3. Nova Scotia	Private farms for sale	Cost from £120-£3,000	Mixed farming, fruit, dairy farming, stock-raising	Up to £500	Secured by mortgage	Advisable	Employment on Farms	£300 necessary	Government will assist in choice of farm and employment in order to gain experience.
4. Quebec	Land offered in lots of 100 acres	£6 per acre, payment within five years	Heavily timbered land	—	—	Yes	—	—	Suitable only for native-born Canadians. Within 5 years settler must clear 15 acres, build house and put up a barn.
5. Ontario	160 acres	Free, subject to conditions as to clearing, cultivation and residence	Root crops and hay	£100	In 10 years at 6 per cent	Yes	Demonstration Farm at Moncton	Not absolutely essential	Men without experience will be trained at Moncton. Expertise in a desirable wage; and subsequently a farm colony will be established near one of the railways
6. British Columbia	Not yet fixed	Pre-emption claim to land purchasable for £2	Timbered, fruit crops, mixed farming	A fund to be provided	—	—	—	—	—
AUSTRALIA—									
1. New South Wales	From 2 to 250 acres, average size 50 acres	Rental $2\frac{1}{2}$ per cent of capital value	Fruit, dairy and mixed farming	$\frac{1}{2}$ of holder's interest	When land becomes productive	Yes	Govt. Farm at Griffith	£50-£100 desirable	—
2. Victoria	Not fixed; land chiefly in irrigation areas.	3 per cent deposit of capital value; 6 per cent per annum for $31\frac{1}{2}$ years	—	£500 maximum	Long period on easy terms	Yes	Agricultural College at Dookie	At least £300	—

A TABLE ILLUSTRATING GOVERNMENT SCHEMES FOR SETTLEMENT OF EX-SERVICE MEN OVERSEAS

Dominion or State	Extent of Individual Grant	Conditions	Crops	Government Loan	Repayment	Whether previous experience necessary	Training	Capital Necessary	Other Remarks
3. Queensland...	10-1,280 acres	Rent 1½ per cent of capital value (average 25s. per acre)	Poultry farms, fruit, mixed farming	£500	Within 40 years at increasing rate of interest	—	Training farms to be established	—	No deposit and no rent for first three years, 60,000 acres already set apart and further acres as required and after construction of railways.
4. South Australia	From a few acres upwards	—	Wheat, fruit and grazing, acc. to dist.	Liberal advances promised	On easy terms	Yes	Farms comprising similar land	Some capital desirable in all cases	Two large blocks of land N. of Adelaide, Mount Remarkable and Mount Crawford estates set apart, suitable for wheat and grazing.
5. Western Australia	(i) From 160 acres (ii) 160 acres	(i) Payment of survey fee and up to 840 acres at 15s. per acre (ii) Same terms.	(i) Wheat growing, intensive cultivation (ii) Mixed farming, fruit, mostly timbered	Loan from Agricultural Bank	—	Yes	Depots to be established at each settlement	Some capital desirable	Men usually find employment on arrival and support themselves while acquiring experience.
6. Tasmania...	From 200 acres, according to class of land	Men must have been previously resident in Tasmania. By purchase or on lease	—	£300	Within 4 years	Some experience	State Farm at Deloraine	—	—
NEW ZEALAND	Provisions apply only to officers and men who will take up undeveloped irrigation holdings	Officers and men who will take up undeveloped irrigation holdings	—	—	—	—	—	—	Presence of native labour makes immigration of unskilled labour impracticable.
UNION OF SOUTH AFRICA.....	—	—	—	—	—	—	—	—	Main industries depend upon the fisheries, forests, and mines. Farming usually combined with some other occupation
NEWFOUNDLAND...	No special scheme at present	—	—	—	—	—	—	—	—
RHODESIA.....	British S. Africa Co. offers 500,000 acres	Practically free of rent to men with requisite capital	Ranching; some crops	—	—	—	Locally	About £1,000	Some knowledge of horses, live stock, and handicrafts valuable. Openings for men who can direct the labour of others.

(1) The Dominion Government has also announced its intention of giving financial assistance to any approved settler on other than Dominion lands in any province of the Confederation.

should be given to them in Great Britain on the farms established or to be established by the Young Men's Christian Association, the Church Army and other public bodies. The Committee attach considerable importance to the suggestion that the home government should provide soldiers, while they are awaiting demobilization, with instruction in carpentering, building and other crafts.

Some *capital* will be necessary for emigration to almost every country in which the settlement of the soldiers and sailors is contemplated. The amount needed varies from a very small sum in the Prairie Provinces of Canada, Ontario and New Brunswick to £1,000 or £1,500 in the Union of South Africa and Rhodesia. In some cases the land is granted freely; and in most other cases payment for it is distributed over a number of years, varying from five—during which the settler must reside on his holding and clear 15 acres, building a house in the first eighteen months—in Quebec, to thirty in Australia. The oversea governments or the agricultural credit banks are ready to advance money for improvements at a moderate

rate of interest; and suggestions for the expenditure of money by the home government in the form of advances of capital were considered by the committee. The amount of capital needed by an emigrant is thus smaller than at first sight appears.

A general consensus of opinion among witnesses before the committee was in favour of the preference of *married* men among the ex-soldiers and sailors for settlement overseas. The committee emphasize the need to facilitate the emigration of women relatives of these men, of widows and orphans of soldiers and sailors, and of other women who may be displaced after the war. They consider the emigration of women to be essential to all effective settlement of the empire; and go so far as to state that they consider grants of money enabling the emigration of wives, children, other women relatives and fiancées of the men to be more justified than grants which would help only themselves.

In every case the *oversea governments* must be satisfied that the immigrants to their territories are persons whom they are prepared to welcome.

## CONTENTS OF THE INSTITUTE ECONOMIC BULLETIN

In addition to those already dealt with herein, the following is a list of the more important subjects treated in the November number of the International Review of Agricultural Economics. Persons interested in any of the articles in this list may obtain the original Bulletin on application to the Institute Branch, so long as the supply for distribution is not exhausted:

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## AGRICULTURAL STATISTICS

### HARVESTS IN THE SOUTHERN HEMISPHERE

Speaking generally, the southern hemisphere crops promise to be almost more plentiful than ever before. In Uruguay, the forecast of the wheat harvest is for 18,372,000 bushels, while in 1916-17 the yield was only 5,390,000 bushels, and the average from 1911-12 to 1915-16 was 6,713,000 bushels. The results of this year have therefore attained the extraordinary proportion of 341 per cent and 274 per cent as compared with the two figures of yield just mentioned.

The outturn is also very satisfactory in the Union of South Africa, where this year's crop is estimated at 8,333,000 bushels, compared with 4,970,000 last year and a five years' average of 6,520,000.

In New Zealand too the forecasts are gratifying. The yield of wheat in that country is expected to be 8,000,000 bushels, compared with 5,037,000 last year and a five years' average of 6,405,000. The yield of oats for New Zealand is estimated at 21,138,000 bushels, being 337 per cent of the crop 1916-17 and 137 per cent of the average.

But it will be best to abstain from too much generalization, and from the assumption that these results indicate a really exceptional yield in the southern hemisphere this year. Only when we have in hand the data from Argentina and Australia can we pronounce definitely as to the aggregate harvests of that hemisphere.



## CROP CONDITIONS IN ENGLAND AND WALES, FEBRUARY 1st

The Crop Reporters of the Board of Agriculture and Fisheries, reporting on the agricultural position on February 1st, state that the hard frosts which prevailed over most of the country during the first half of January appear to have done little harm to the crops. Wheat is everywhere looking well, especially the early sown, but the

later wheat is backward. Oats and beans are also mostly satisfactory, though the latter is somewhat backward and a thin plant in the east. The severe weather and snow stopped field work generally at first, but good progress could be made towards the end of the month, and cultivation is generally well forward for the time of year.

## GRAIN RESERVES IN THE UNITED STATES

The United States Department of Agriculture estimates that on March 1, 1918, there remained in farmers' hands 111,272,000 bushels of wheat compared with 100,650,000 on March 1st, 1917, 244,448,000 in 1916,

152,903,000 in 1915, and 151,809,000 in 1914.

The amounts of other grains in farmers' hands on March 1, 1918, 1917 and 1916 were as follows:

	1918	1917	1916
Corn.....	1,292,905,000	782,303,000	1,116,559,000
Oats.....	595,195,000	394,211,000	598,148,000
Barley.....	43,404,000	33,244,000	58,301,000

## BROOMHALL'S FOREIGN CROP CABLE, MARCH 12th

*France*.—Weather mostly springlike and ample moisture is reported. Agricultural outlook is favourable and acreage larger than last year. Native supplies moderate and foreign arrivals increasing.

*Morocco*.—Crop prospects are favourable with fine weather prevailing. Harvesting, though late, is expected to be good. Barley is in good demand for seed purposes and supplies fair. Sowing of wheat increased.

*South Africa*.—Wheat crop has been officially reported as a record one. Oats and barley also yielded large. Potatoes poor. Exports moderate.

*Spain*.—Rains together with mild weather greatly improved wheat prospects. Hard frost in some districts caused some damage. Planting continues under favourable weather conditions, moisture plentiful. Native supplies good but foreign arrivals continue.

*Italy*.—Weather fine and cold. Growing wheat is doing well and reports on the whole are favourable. Some fears have been expressed of a return of severe weather

as snow is disappearing. Native supplies light. It is reported that much of the acreage formerly allotted to melon growing will be put under wheat.

*United Kingdom*.—Early sown wheat is looking well but late planted is backward. Oats are in satisfactory condition. Severe weather interfered with field work, but cultivation is now progressing rapidly. The acreage will be large. Scotland wheat acreage 10 per cent over last year. Wheat is being used more freely by millers.

*Balkan States*.—Weather favourable. Snow was abundant and moisture plentiful. Supplies ample and outlook for corn fine.

*Scandinavian Peninsula*.—Weather remains cold and agriculture is slow. Supplies scanty. Foreign arrivals moderate.

*Russia*.—All reports confirm a very disastrous winter for agriculture, as severe cold has been evidenced, with snow scattered and only heavy in parts. Much of the great belt was partly bare. Ukraine is holding about 48,000,000 bushels of wheat. North ports are bare of supplies.

## NUMBER OF SHEEP IN NEW ZEALAND

The number of sheep in New Zealand on April 30, 1917, was 25,270,386, compared

with 24,788,150 on April 30, 1916, an increase of 482,236 or 1.9 per cent.

## DIRECTORY OF THE DEPARTMENT OF AGRICULTURE.

Minister.....	The Honourable Thos. Alexander Crerar
Private Secretary.....	T. J. Lynton
Deputy Minister.....	Geo. F. O'Halloran, B.A., B.C.L.
Assistant Deputy Minister Secretary.....	Lt.-Col. A. L. F. Jarvis, I.S.O.
Commissioner under The Agricultural Instruction Act..	W. J. Black, B.S.A.
Chief Translator.....	C. E. Mortureux, B.S.A.

The Dominion Experimental Farms Branch.. Director, J. H. Grisdale, B.Agr.

Of the Central Experimental Farm and twenty Branch Farms and Stations distributed over Canada, conducts research and experiments in animal, field, orchard, garden and greenhouse husbandry, distributes superior seeds, analyzes and tests fertilizers and feeding stuffs, studies diseases of plants and administers ordinances for their control, and demonstrates what are of value.

The Dairy and Cold Storage Branch..... Commissioner, J. A. Ruddick.

Encourages and assists in the development of the dairying industry and the improvement of the storage, transportation, sale and trade in agricultural products; administers the Dairy Industry Act (1914), the Cold Storage Act (1907), and the Cold Storage Warehouse Act (1914).

The Seed Branch..... Commissioner, George H. Clark, B.S.A.

Encourages the production and use of superior seed, the production of farm and garden crops, tests seed for farmers and seed merchants and administers the Seed Control Act.

The Live Stock Branch..... Commissioner, John Bright.

Encourages and assists the development of the live stock industry.

The Health of Animals Branch.... Veterinary Director General, Frederick Torrance, B.A., D.V.S.

Administers the Animals Contagious Diseases Act and the Meat and Canned Food Act. Protects Canadian live stock from contagious diseases.

Entomological Branch... Dominion Entomologist, C. Gordon Hewitt, D.Sc.

Conducts investigations on insects in relation to agriculture, encourages the use of methods of prevention and control and administers the Insects and Pests Section of the Destructive Insect and Pest Act.

The Fruit Branch..... Commissioner, Donald Johnson.

Encourages the development of the fruit industry along commercial lines. Also administers Part IX of the Inspection and Sale Act relating to fruit and fruit packages.

International Institute of Agriculture.. Commissioner, T. K. Doherty, LL.B.

Supplies Institute at Rome statistics and official information respecting agriculture in Canada and prepares for distribution in Canada corresponding information from countries adhering to the international Institute of Agriculture.

The Publication Branch..... Editor and Chief, J. B. Spencer, B.S.A.

Distributes the publications of the Department and edits The Agricultural Gazette of Canada.

The Exhibition Branch..... Commissioner, Col. Wm. Hutchison.

Prepares and takes charge of Canada's building and exhibits at International Expeditions.

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